

SITE ASSESSMENT REPORT FOR BUILDING 2273, MAIN BASE

Naval Training Center Orlando, Florida



Southern Division Naval Facilities Engineering Command

Contract Number N62467-94-D-0888 Contract Task Order 0024

MARCH 2001

0301-A032

March 30, 2001

Commander SOUTHNAVFACENGCOM ATTN: Ms. Barbara Nwokike, Code 1873 P.O. Box 190010 2155 Eagle Drive North Charleston, SC 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888

Contract Task Order No. 0024

Subject:

Site Assessment Report for Building 2273 Naval Training Center, Orlando, Florida

Dear Ms. Nwokike:

Enclosed are two copies of the final Site Assessment Report for Building 2273. This final report includes revisions resulting from comments provided by the Orlando Partnering Team. If you have any questions regarding the report or the investigation, please contact me at (865) 220-4730.

Sincerely,

Steven B. McCoy, P.E.

B.McCoy

Task Order Manager

SBM:ckf

Enclosures

C:

Mr. Rick Allen, Harding Lawson Associates

Mr. Paul Calligan, Tetra Tech NUS

Mr. Michael J. Campbell, Tetra Tech NUS

Mr. David Grabka, FDEP (2 copies)

Mr. Wayne Hansel, SOUTHDIV (3 copies)

Mr. Mark Perry/File, Tetra Tech NUS (unbound)

Ms. Nancy Rodriquez, USEPA Region 4

Mr. Steve Tsangaris, CH2M Hill

Ms. Debbie Wroblewski, Tetra Tech NUS (cover letter only)

File/Edb

feviend 7/15 - Rev. 1 4-20-01

SITE ASSESSMENT REPORT FOR BUILDING 2273, MAIN BASE

Naval Training Center Orlando, Florida



Southern Division Naval Facilities Engineering Command

Contract Number N62467-94-D-0888
Contract Task Order 0024

MARCH 2001

SITE ASSESSMENT REPORT FOR **BUILDING 2273, MAIN BASE**

NAVAL TRAINING CENTER ORLANDO, FLORIDA

COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:

Department of the Navy, Southern Division **Naval Facilities Engineering Command** 2155 Eagle Drive North Charleston, South Carolina 29406

Submitted by:

Tetra Tech NUS, Inc. 661 Andersen Drive Foster Plaza 7 Pittsburgh, Pennsylvania 15220

CONTRACT NO. N62467-94-D-0888 **CONTRACT TASK ORDER 0024**

MARCH 2001

PREPARED UNDER THE SUPERVISION OF:

STEVEN B. McCOY TASK ORDER MANAGER TETRA TECH NUS, INC. **OAK RIDGE, TENNESSEE** APPROVED FOR SUBMITTAL BY:

DEBBIE WROBLEWSKI PROGRAM MANAGER TETRA TECH NUS, INC.

hobluski

PROFESSIONAL GEOLOGIST CERTIFICATION

I hereby certify that this Site Assessment Report for Building 2273, Main Base, Naval Training Center, Orlando, Florida, was prepared under my direct supervision in accordance with acceptable standards of geological practice.

Michael J. Campbell, P.G. / Date

License No. PG-0001981

TABLE OF CONTENTS

EXE	CUTIVE SUMMARY	ES-
1.0	INTRODUCTION	
1.0	1.1 PURPOSE AND SCOPE	·····
	1.2 DESCRIPTION AND SETTING	1-1 4 /
	1.2.1 Location	i
	1.2.2 Site Description	۱-۲ ۱-۲
	1.2.3 Topography and Drainage	
	1.2.4 Geology and Hydrology	1-2
	1.2.5 Land Use	1-0
	1.2.6 Potable Water Well Survey	1-9
	1.2.7 Surface Water	1-10
	1.3 BACKGROUND	1-10
	1.3.1 Site History and Operations	1-10
	1.3.2 Underground Storage Tank Removal and Closure Assessment	1-11
2.0	SUBSURFACE INVESTIGATION METHODS	2-1
	2.1 CONTAMINATION ASSESSMENT, JULY 1996 TO MARCH 1997	2-1
	2.2 ADDITIONAL CONTAMINATION ASSESSMENT, JUNE 1997 TO SEF	PTEMBER 1997 2-3
	2.3 UTILITY CONSTRUCTION DAMAGE TO MONITORING WELLS	2-4
	2.4 ADDITIONAL CONTAMINATION ASSESSMENT, SEPTEMBER 1999	TO
	SEPTEMBER 20002.4.1 Objectives and Guidance	2-4
	2.4.2 Well Abandonment	2-4
	2.4.3 New Well Installation	2-0
	2.4.4 Soil Sampling	2-0
	2.4.5 Groundwater Sampling	<i>۲-۱</i> 2-7
	2.4.6 Surveying	2-7
3.0	RESULTS OF INVESTIGATIONS	0.4
	3.1 SITE-SPECIFIC HYDROGEOLOGY	۱-د. د د
	3.1.1 Lithology	۱-ن ۱- ۲- د
	3.1.2 Aquifer Characteristics	
	3.2 SOIL QUALITY	3-10
	3.3 GROUNDWATER QUALITY	3-11
	3.3.1 Investigations Prior to 1998	3-11
	3.3.2 Investigations After 1998	3-12
	3.3.3 Groundwater Quality Summary	3-12
4.0	DISCUSSION	4-1
5.0	CONCLUSIONS AND RECOMMENDATIONS	5-1
KEFE	RENCES	R-1

APPENDICES

Α	SITE ASSESSMENT REPORT SUMMARY SHEET	A-1
В	SOIL BORING LOGS	B-1
С	WELL COMPLETION LOGS	
D	TETRA TECH NUS FIELD PERSONNEL	
E	GRAIN SIZE ANALYSÉS	
F	GROUNDWATER SAMPLING LOGS	
G	CHAIN-OF-CUSTODY FORMS	G-1
н	GROUNDWATER ANALYTICAL RESULTS	
Į.	WELL LOCATIONS AND TOP OF CASING ELEVATIONS	
	TABLES	
.		
<u>NUMB</u>	<u>EK</u>	PAGE
2-1	Well Construction Details	0.5
3-1	Grain Size Analyses	3-2
3-2 3-3	Groundwater Elevations Summary	3-3
		3-17
	FIGURES	
NILIMEDI		
<u>NUMB</u>	<u>=n</u>	PAGE
1-1 1-2 1-3 1-4 3-1 3-2	USGS Topographic Map Site Vicinity Map Local Area Map Site Plan Groundwater Potentiometric Surface Map – Shallow Aquifer Zone	
3-2 3-3 3-4	Groundwater Potentiometric Surface Map – Deep Aquifer Zone	

ACRONYMS

ABB-ES ABB Environmental Services, Inc.

B&R Environmental Brown & Root Environmental

bgs below ground surface

CLEAN Comprehensive Long-Term Environmental Action Navy

F.A.C. Florida Administrative Code

FDEP Florida Department of Environmental Protection

FPS Florida Petroleum Services, Inc.

GCTL Groundwater Cleanup Target Level

HLA Harding Lawson Associates
KAG Kerosene Analytical Group

MTBE methyl tert-butyl ether

Navy U.S. Navy

NTC Naval Training Center
OPT Orlando Partnering Team
OVA organic vapor analyzer

PAH polynuclear aromatic hydrocarbon

POP Project Operations Plan

PVC polyvinyl chloride

Quanterra Environmental Services

SOUTHDIV Southern Division Naval Facilities Engineering Command

TCL Target Compound List

TRPH total recoverable petroleum hydrocarbon

TtNUS Tetra Tech NUS, Inc.

USEPA U. S. Environmental Protection Agency

USGS U. S. Geological Survey
UST underground storage tank
VOC volatile organic compound

EXECUTIVE SUMMARY

Building 2273 is a wooden structure that once served as a pumping station for heating fuel used at numerous sites at the Naval Training Center, Orlando. Pumps in Building 2273 transferred fuel from four 11,500-gallon underground storage tanks to tank trucks. Old or contaminated fuel was returned to an on-site browser to await disposal. Two of the underground storage tanks were removed in 1993 and the remaining underground storage tanks were removed in January 1996. Approximately 2 cubic yards of contaminated soil found near product and vent lines led to environmental investigations in accordance with Chapter 62-770 of the Florida Administrative Code. The investigations proceeded as described below.

Contamination Assessment, July 1996 to September 1997

ABB Environmental Services, Inc., performed the following actions:

- Collected and analyzed 90 soil samples to determine the extent of soil contamination. Organic vapor analyzer results suggested that a small volume of contaminated soil lay near the water table at the location of monitoring well MW-4.
- Installed a temporary well (TW-1) near the product lines. The well contained a product sheen when sampled on February 21, 1996, but no additional product has been observed in wells on the site.
- Documented the removal and incineration of the contaminated soils.
- Surveyed nearby sites that may have contributed to the contamination.
- Surveyed nearby receptors, including public and private water supplies and surface water bodies.
- Installed 2 piezometers and 13 monitoring wells and sampled groundwater periodically. The wells
 were installed above and below a partially cemented sand layer that exists about 20 to 27 feet
 below ground surface.
- Determined the groundwater flow direction, hydraulic conductivity, hydraulic gradient, and soil transmissivity.

 Found organic contaminants in groundwater that exceeded Florida Department of Environmental Protection Groundwater Cleanup Levels. Groundwater samples from wells in the southwestern part of the site contained the highest concentrations of contaminants.

ABB Environmental Services, Inc., concluded that one of the four former underground storage tanks probably caused the contamination and recommended that screening at nearby sites be completed before taking additional actions at Building 2273.

Destruction of Monitoring Wells

City of Orlando construction crews destroyed several monitoring wells during utility construction performed in the spring of 1998, including four shallow wells, four deep wells, and two compliance wells. ABB Environmental Services, Inc., now owned by Harding Lawson Associates, recommended that the destroyed wells be properly abandoned and replaced with new wells.

Site Assessment, September 1999 to February 2001

Tetra Tech NUS, Inc., continued investigations at the site. Tetra Tech NUS, Inc., installed two new shallow wells and four new deep wells and performed periodic groundwater sampling. Analysis of the groundwater samples indicates that the contaminated zone lies in the southwest corner of the site, beneath the partially cemented sand layer described above. Tetra Tech NUS, Inc., also submitted soil samples for grain size analysis and had a registered surveyor provide accurate horizontal positions and top of casing elevations for the new monitoring wells.

Tetra Tech NUS, Inc., personnel performed a survey of the neighborhood south of Building 2273 to provide current information on land use and possible private wells in February 2001. Residents reported the presence of two drinking water wells at distances of approximately 0.18 and 0.28 miles southeast of the site. An irrigation well lies approximately 0.23 miles southeast of the site.

Recommendations

Although the concentrations of organics in groundwater have fallen significantly, recent sampling indicates that concentrations of some organics, particularly benzene, still exceed Groundwater Cleanup Target Levels. Tetra Tech NUS, Inc., recommends quarterly sampling of two downgradient wells, two upgradient wells, and one well in the source area and reevaluation of the conditions after one year of monitoring. Three additional monitoring wells should be installed to assure accurate monitoring of groundwater flow

and the chemical composition of groundwater below the surficial aquifer. A change of status to No Further Action will be appropriate if no concentrations in downgradient wells exceed Groundwater Cleanup Target Levels and concentrations in source wells meet approved milestone objectives the last two monitoring events. Tetra Tech NUS, Inc., also recommends properly abandoning monitoring wells MW-3 and CW-2, which were found during a recent sampling event.

1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

Tetra Tech NUS, Inc., (TtNUS) completed a Site Assessment at Building 2273, located at the former Naval Training Center (NTC), Orlando. The work was conducted for the U.S. Navy (Navy) Southern Division Naval Facilities Engineering Command (SOUTHDIV) under Contract Task Order 0024 for the Comprehensive Long-term Environmental Action Navy (CLEAN III), Contract Number N62467-94-D-0888. ABB Environmental Services, Inc. (ABB-ES), conducted previous studies at the site under Contract Number N62467-89-D-0317/107.

The purpose of the Site Assessment was to evaluate the environmental impacts of previous use of the site as a bulk storage facility for heating oil in accordance with the requirements of Chapter 62-770 *Petroleum Contamination Site Cleanup Criteria*, Florida Administrative Code (F.A.C.) (FDEP, 1999b). ABB-ES and TtNUS fulfilled this objective by taking the following actions:

- Reviewed available, applicable documents such as closure reports, discharge reports, and maintenance records.
- Surveyed nearby sites that may have led to contamination near Building 2273.
- Surveyed nearby receptors near Building 2273, including public and private water supplies and surface water bodies.
- Completed a surface and subsurface investigation, including the installation of monitoring wells, and soil and groundwater sampling.
- Determined groundwater flow direction, hydraulic conductivity, hydraulic gradient, and soil transmissivity.
- Replaced several monitoring wells that were destroyed during utility construction activities and installed additional wells to assure proper monitoring of the horizontal and vertical extent of groundwater contamination.

Additional details of the investigations and analytical results are presented in Sections 2.0 and 3.0. The discussions below compare observed contaminant concentrations to Florida Department of Environmental

Protection (FDEP) Groundwater Cleanup Target Levels (GCTLs) published May 26, 1999 (FDEP, 1999). Some previous reports cite GCTLs that were subsequently revised in the May 1999 document.

A Site Assessment Report Summary Sheet, as required by Chapter 62-770, F.A.C., is included in Appendix A.

1.2 DESCRIPTION AND SETTING

1.2.1 Location

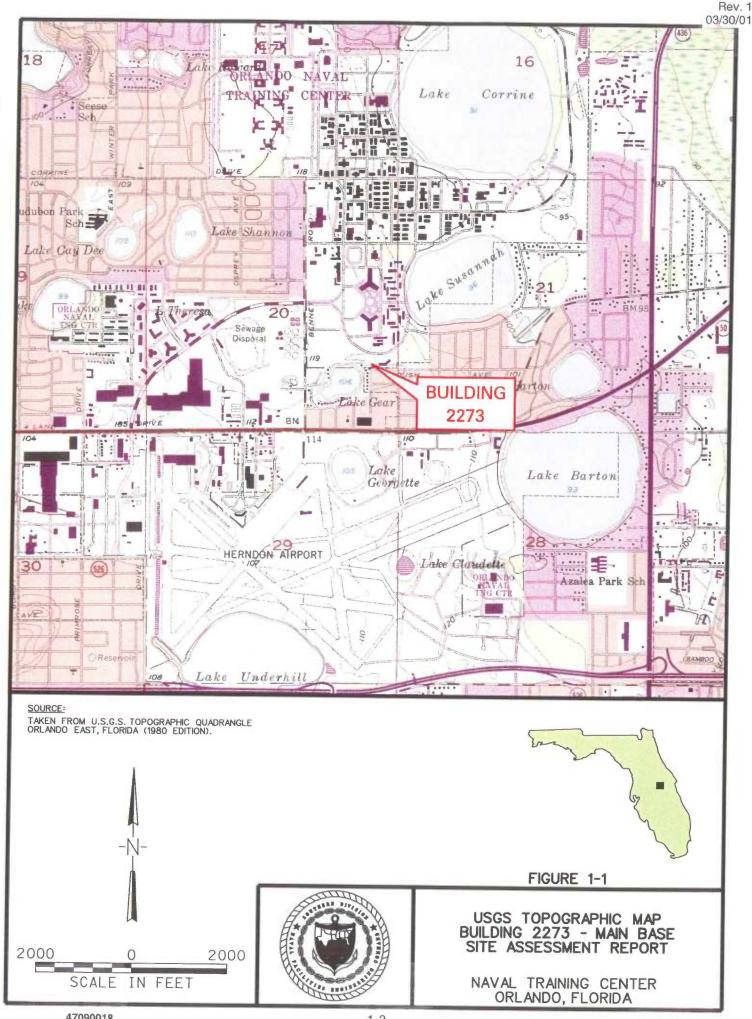
Building 2273 was the site of a former heating oil bulk storage facility at NTC, in Orange County, Florida. The site lies in the southeastern part of Section 20, Township 22 South, and Range 30 East. The area surrounding NTC is shown on the U.S. Geological Survey (USGS) Orlando East, Florida, 7.5-Minute Series quadrangle. A portion of the map is presented as Figure 1-1. (The lake named Lake Corrine on the map is now known as Lake Baldwin). Figure 1-2 shows the location of Building 2273 near the southern NTC boundary. The local area around Building 2273, including nearby private wells and significant commercial establishments, is shown in Figure 1-3. Figure 1-4 shows the location of Building 2273 on the site, the approximate former location of the underground storage tanks (USTs), and the locations of monitoring wells and underground utilities.

1.2.2 <u>Site Description</u>

Building 2273 was a one-story wooden structure built on a concrete foundation with a basement that contained the pumps used to transfer fuel from four 11,750-gallon USTs located immediately south of the building. Two of the USTs (2273-1 and 2273-2) were removed in 1993. No dissolved petroleum contamination was detected when existing compliance wells were sampled on August 15, 1995. The remaining USTs (2273-3 and 2273-4) were removed in January 1996 by Florida Petroleum Services, Inc., (FPS). Details are included in Appendix B of the Building 2273 Contamination Assessment Report (ABB-ES, 1997a). Contaminated soil and groundwater were observed when FPS removed the remaining USTs. No significant soil petroleum contamination was observed outside a small soil volume near the product and vent lines. A temporary well (TW-1) was installed near the product lines and a petroleum sheen was detected when TW-1 was sampled on February 21, 1996 (ABB-ES, 1997a).

1.2.3 Topography and Drainage

Most of Orlando, including NTC, lies in the Atlantic Coastal Plain physiographic province. NTC is in the highland topographic region of Orange County, where elevations generally exceed 105 feet above mean



ngb . v11x3-8c

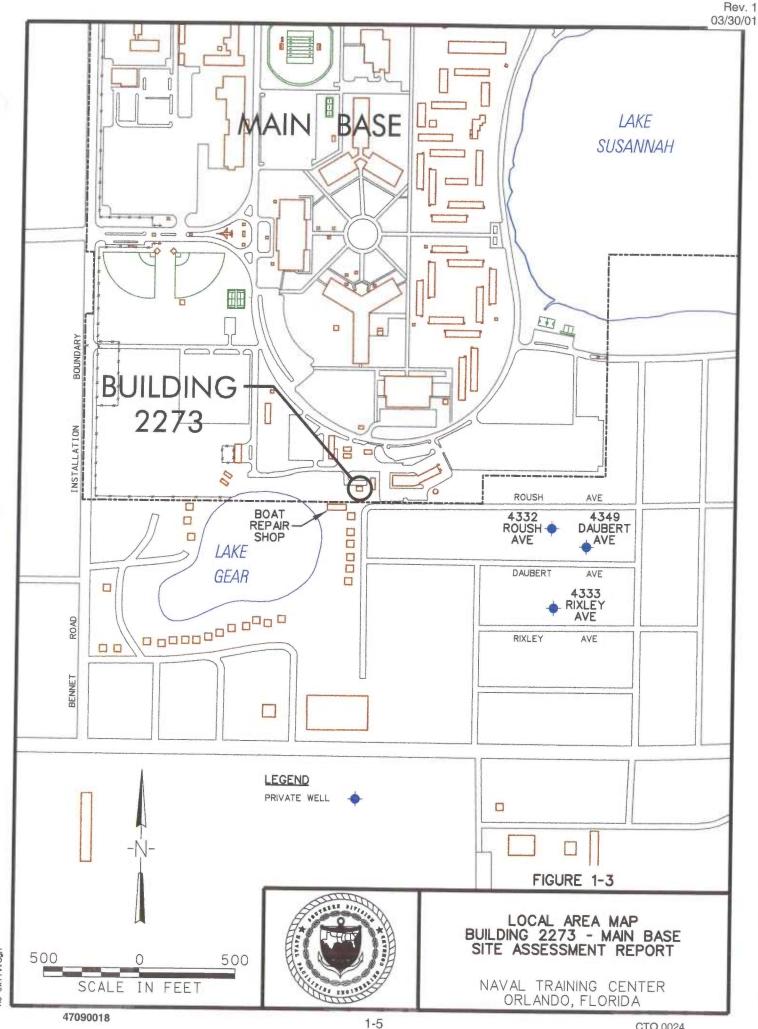
47090018

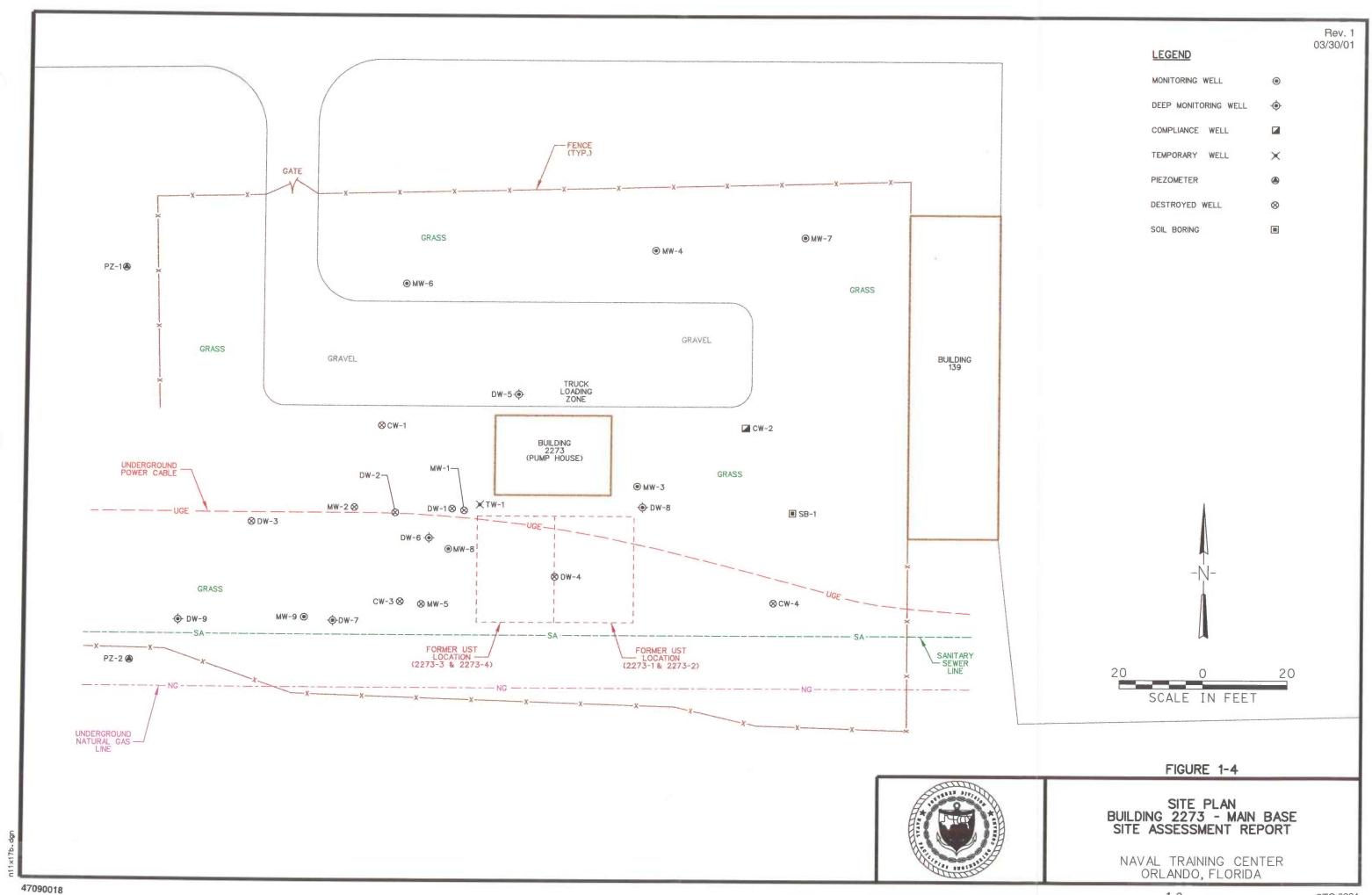
n8-5×11v.dgn

1-4

CTO 0024

ORLANDO, FLORIDA





sea level. The region contains many closed depressions and sinkhole lakes that contribute to groundwater recharge (Lichtler, Anderson, and Joyner, 1968). Regional drainage in the flat area surrounding Orlando is generally poor, with flow being generally to the south. Soils east of NTC are poorly drained, while soils to the north, south, and west are considered to be somewhat excessively drained to moderately well drained (C.C. Johnson & Associates, 1985).

The site is flat, with an average elevation of approximately 115 feet above mean sea level. Surface runoff flows to ditches along nearby streets. The well-drained soils and lack of relief at the site suggest that significant surface runoff occurs only during heavy or prolonged rainfall events.

1.2.4 Geology and Hydrology

Surface and near-surface deposits in the Orlando area are of primary interest to this assessment. The soils are mainly of the Lakeland-Eustis-Blanton-Orlando type, consisting of sands and clayey sands underlain by limestone. A typical soil profile, as described in well boring logs from the site, reveals gray and brown to black fine sand extending from the surface to a depth of about 30 feet below ground surface (bgs). The sand appears to be cemented with iron oxide from about 20 to 27 feet bgs. A gray to olive-green sandy clay is present below 30 feet bgs (ABB-ES, 1997a). Boring logs and well completion logs for wells installed by TtNUS are enclosed as Appendices B and C, respectively. No cross-section is provided because very little lithologic variation was observed during well installation.

Borings advanced during a site investigation at Study Area 39, adjacent to the Building 2273 site, indicated that the upper sediments of the Hawthorn Group lie about 80 feet bgs (TtNUS, 2000). The Hawthorn Group, which lies directly atop the Floridan Aquifer System, is considered to act as a confining layer and intermediate aquifer. Many sinkholes are present in the areas surrounding the facility, but no sinkholes have been reported on the NTC Main Base. Soil conditions at the Main Base are generally favorable for urban development.

The static level of groundwater typically lies at depths of about 12 feet bgs in the wells screened across the water table and 15 to 16 feet bgs in the wells screened beneath the partially cemented sands. The lower groundwater levels observed in wells screened below the partially cemented layer suggest that conditions on-site or nearby create a downward component of groundwater flow. Groundwater flows from east-northeast to west-southwest in the uppermost portion of the surficial aquifer, while groundwater beneath the partially cemented layer appears to flow to the southeast. Soil variations, the presence of a cemented or partially cemented sand layer, and the hydraulic effects of nearby lakes may cause

1-8

groundwater flow directions to differ above and below the partially cemented sand layer. Additional details regarding flow direction and vertical gradients are provided in Section 3.1, Site-Specific Hydrogeology.

1.2.5 Land Use

The NTC Main Base occupies about 1,095 acres and extends approximately 1.5 miles north of the site. The Main Base lies within the Orlando Standard Metropolitan Statistical Area, which includes Orange, Osceola, and Seminole Counties. The predominant land use surrounding NTC is residential, although commercial property borders most of the major nearby roads. Several large lakes lie within a radius of 3 miles. Orlando Executive Airport lies approximately 1.5 miles south of the Main Base.

TtNUS personnel surveyed the area around the south end of the NTC Main Base on February 10, 2001, to document current land use. They found the major streets, Colonial Drive and Bennett Road, to be lined with commercial development. A large shopping complex lies immediately west of Bennett Road. Residences line the smaller streets, and an apartment complex lies west and south of Lake Gear. A bicycle and walking path lie immediately south of the site boundary. A boat repair and maintenance shop (Figure 1-3) lies on the northeast edge of Lake Gear, approximately 100 feet southwest of the site. Personnel observed seven drums of compounds used in boat repair at the shop.

Since its opening in 1940, the Main Base has served as a training facility. Therefore, barracks, training areas, and associated administrative areas dominated land use on the base. The facility was first used by the U.S. Army, then the U.S. Air Force, and later by the U.S. Navy. Building 2273 was one of the many areas that supported the training missions of the armed forces.

Study Area 30 lies east of the site and Study Area 39 lies approximately 500 feet to the west. Building 139, a pesticide shed that is part of Study Area 30, lies immediately east of the site. These two study areas have been the subjects of separate environmental investigations. The results of these investigations, as they relate to Building 2273, are summarized in Section 3.0.

1.2.6 <u>Potable Water Well Survey</u>

The results of a potable water survey for the area surrounding Building 2273 are presented in the NTC Main Base Contamination Assessment Report (ABB-ES, 1996). Two active wells owned and operated by the Orlando Utility Commission are nearby: WW-12 lies 0.7 mile northeast (upgradient) and WW-13 lies 1.2 miles southwest (downgradient). Potable water well WW-9, which lies approximately 0.7 mile from the site, was inactive at the time of the investigation. The following irrigation wells lie near the site:

- WW-4 is 2,750 feet northwest.
- WW-5 is 2,250 feet north.
- WW-6 is 500 feet northwest.

TtNUS personnel visited the area south of the site on February 12, 2001. They conducted an informal survey, looking for well houses and asking residents if they knew of potable water or irrigation wells nearby. They were told of the following wells near the site (Figure 1-3):

- A potable water well at 4332 Roush Avenue. This well lies approximately 0.18 mile southeast of the site.
- A potable water well at 4333 Rixey Street. This well lies approximately 0.23 mile southeast of the site.
- An irrigation well at 4349 Daubert Street. This well lies between the two potable water wells described above.

Another irrigation well observed on the south side of Lake Gear is unlikely to be influenced by groundwater from Building 2273.

1.2.7 <u>Surface Water</u>

Lake Gear, 200 feet southwest of the site, is the nearest body of surface water. Lake Susannah (1,000 feet northeast), Lake Georgette (1,250 feet south), Little Lake Barton (2,560 feet south), and Lake Baldwin (4,200 feet northeast) are the nearest of numerous other lakes in the area.

1.3 BACKGROUND

1.3.1 <u>Site History and Operations</u>

The NTC Main Base has served military needs since it opened as an Army Air Corps facility in 1940. The Air Force assumed command in 1947 and operation was transferred to the Navy in 1968. The Base Realignment and Closure program scheduled the facility for closure in 1999. In recent years, the Main Base has served as a training facility for new and recently graduated recruits.

Building 2273 was a fuel distribution facility providing heating oil to other facilities on the base. Pumps in a 15- to 18-foot-deep basement pumped fuel into a 3,000-gallon Navy tanker for distribution throughout

NTC. Contaminated fuel from various facilities was returned to Building 2273 for storage in a 300-gallon waste oil browser.

1.3.2 <u>Underground Storage Tank Removal and Closure Assessment</u>

Little or no documentation of the removal of Tanks 2273-1 and 2273-2 in 1993 is available. A Tank Closure Assessment Report presented as Appendix B of the Building 2273 Contamination Assessment Report (ABB-ES, 1997a) describes the removal of tanks 2273-3 and 2273-4 in detail. The following highlights are excerpted from the Tank Closure Report.

- Tanks 2273-3 and 2273-4 were removed in January 1996.
- FPS certified that the tanks were removed as specified in American Petroleum Institute document 1604 and in accordance with Section 17-761.800, F.A.C.
- Approximately 78 soil samples collected from areas surrounding the tanks, product lines, and vent lines were subjected to organic vapor analyses. No significant soil petroleum contamination was observed outside a small soil volume near the product and vent lines.
- Approximately 2 cubic yards of soil from the area near the product and vent lines were segregated for incineration. The results of pre-burn and post-burn analyses show that the soil was properly incinerated.
- Groundwater samples were collected from four compliance wells surrounding the tank pit and analyzed for organic compounds. Samples were subjected to the Kerosene Analytical Group (KAG) suite of analyses which includes U.S. Environmental Protection Agency (USEPA) Methods 504 (ethylene dibromide), 601 (volatile organic halocarbons), 602 (volatile organic aromatics), 239.2 (total lead), 610 [polynuclear aromatic hydrocarbons (PAHs)], and 418.1 [total recoverable petroleum hydrocarbons (TRPH)]. Lead, found in CW-1, CW-2, and CW-4, was the only chemical detected.
- ABB-ES installed a temporary well (TW-1) near the product and vent lines. Groundwater sampling conducted in February 1996 revealed a product sheen in TW-1 and approximately 0.75 gallon of product was bailed from the well. Observed concentrations of ethylbenzene, total volatile organic compounds (VOCs), and total xylenes exceeded current GCTLs.
- ABB-ES recommended additional investigation and preparation of a contamination assessment report.

Observed concentrations of contaminants exceeding GCTLs are discussed in Section 3.0.

47090018 1-11 CTO 0024

2.0 SUBSURFACE INVESTIGATION METHODS

2.1 CONTAMINATION ASSESSMENT, JULY 1996 TO MARCH 1997

ABB-ES performed a contamination assessment to evaluate the soil and groundwater conditions at the former heating oil bulk storage fuel farm (ABB-ES, 1997a). A brief summary follows.

- Ninety soil samples from 24 hand auger locations were collected site-wide to determine the extent
 of soil contamination. Organic vapor analyzer (OVA) results indicated that an isolated volume of
 petroleum-impacted soil lay near the water table at the present location of monitoring well MW-04.
- Two piezometers (PZ-1 and PZ-2) were installed to a depth of 9 feet to help determine the
 groundwater flow direction (in conjunction with elevations measured in the four existing
 compliance wells). The piezometers were installed just outside the site boundary at locations
 near the northwest and southwest corners of the site.
- Seven shallow monitoring wells (MW-1 through MW-7) were installed. The wells were constructed of 2-inch diameter polyvinyl chloride (PVC), approximately 15 feet deep, with 10 feet of 0.010-inch slotted well screen. The screened intervals were selected to encompass the anticipated seasonal water level fluctuations. All wells were flush mounted, with locking caps, surface well boxes, and protective covers. Boring logs and well completion details are provided in Appendices C and D of the Contamination Assessment Report (ABB-ES, 1997a). The screened intervals lay above a partially cemented soil layer that was observed at depths of 20 to 27 feet. Water level measurements from these wells should be representative of a shallow, unconfined aquifer.
- Three deep wells (DW-1, DW-2, and DW-3) were installed. Each deep well was double cased with 6-inch PVC casing cemented to depths of 20 feet, 30 feet, and 20 feet, respectively, to prevent groundwater flow between the shallow and deep zones. Each deep well had a 2-inch-diameter PVC inner well casing inside a 6-inch-diameter PVC outer casing and 5 feet of 0.010-inch slotted well screen. All wells were flush mounted, with locking caps, surface well boxes, and protective covers. Total well depths were 32 feet, 45 feet, and 30 feet, respectively. Boring logs and well completion details are provided in Appendices C and D of the Building 2273 Contamination Assessment Report (ABB-ES, 1997a).

The screened intervals lay below a partially cemented layer that was observed at depths of 20 to 27 feet bgs. Water level measurements from these wells may be representative of a confined or partially confined aquifer.

- Groundwater elevations were measured in December 1996, January 1997, and February 1997. (ABB-ES reported relative groundwater elevations based on an assumed top of casing elevation of 100.00 feet at MW-1.) Relative groundwater elevations in the seven shallow monitoring wells (MW-1 through MW-7) and four compliance wells (CW-1 through CW-4) ranged from 90.67 to 92.22 feet, with the highest elevations being observed in December 1996. Relative elevations in the three deep monitoring wells (DW-1 through DW-3) ranged from 85.19 to 90.23 feet.
- Evaluation of the site stratigraphy and hydrogeology was limited to the surficial aquifer beneath
 the site. Gray, brown, and black fine sands were found to a depth of 30 feet bgs. From 20 to
 27 feet bgs, the sand was dense and appeared to be partially cemented with iron oxide. A gray to
 olive-green clayey sand was present from 30 to 47 feet bgs.
- Rising-head aquifer slug tests were conducted in monitoring wells MW-1, MW-2, DW-1, and DW-2 to provide data for calculating a representative hydraulic conductivity for the aquifer beneath the site.
- ABB-ES observed or calculated the following hydraulic characteristics for the site:
 - The shallow groundwater flow direction is generally from east-northeast to west-southwest.
 - The hydraulic gradient is approximately 1.06 x 10⁻² feet per foot.
 - The hydraulic conductivity is estimated to be 3.29 feet per day.
 - The estimated groundwater flow velocity is 36.5 feet per year.
 - The transmissivity is 861 gallons per day per foot.
- ABB-ES conducted groundwater sampling on the following dates:
 - Wells CW-1 through CW-4 were sampled on August 15, 1995.
 - Well TW-1 was sampled on February 21, 1996.
 - Wells MW-1, MW-2, and MW-3 were sampled on July 25, 1996.
 - MW-4, MW-5, and DW-1 were sampled on October 1, 1996.
 - MW-6, MW-7, DW-2, and DW-3 were sampled on December 9, 1996.
 - DW-1, DW-2, and DW-3 were sampled on January 2, 1997.
 - Analytical results are discussed in Section 3.0.

 Two active potable wells were identified in the site vicinity (one 0.7 mile upgradient; one 1.2 miles downgradient). Both wells are owned and operated by the Orlando Utilities Commission.

The principal concerns at this stage of the investigation were the elevated concentrations of ethylbenzene, total VOCs, and total xylenes in an area around monitoring wells MW-1, DW-1, and DW-2. In addition, benzene concentrations exceeding the GCTL were observed at wells MW-4 and DW-2.

2.2 ADDITIONAL CONTAMINATION ASSESSMENT, JUNE 1997 TO SEPTEMBER 1997

ABB-ES recommended overdevelopment of monitoring wells MW-1, DW-1, and DW-2 to attempt to lower contaminant concentrations near those wells and resampling of all wells on the site. The FDEP responded, recommending the installation of two additional monitoring wells, DW-4 and DW-5, screened at approximately the same depth as DW-1. One well was to be placed to the southeast of well DW-1 and the other well to the north-northeast to better determine the direction of groundwater flow. FDEP also requested that all deep wells be sampled and analyzed for the KAG analytes (FDEP, 1997).

Double-cased deep monitoring wells DW-4 and DW-5 were installed on June 5 and 6, 1997. DW-4 was installed about 20 feet south of Building 2273, near the center of the former tank pit. DW-5 was installed about 20 feet north of Building 2273. Each well was 32 feet deep, screened from 27 to 32 feet bgs and constructed in the same manner as deep wells DW-1 through DW-3. The groundwater flow direction in the aquifer at the elevation of the deep monitoring wells was interpreted to be similar to that in the shallow groundwater: east-northeast to west-southwest (ABB ES, 1997b).

The five deep monitoring wells were sampled in June 1997. The significant results of the June 1997 resampling are as follows.

- Concentrations of total VOCs and total xylenes at DW-1 and DW-2 were higher than those found during the January 1997 sampling and exceeded GCTLs.
- Benzene was detected in the sample from DW-2 at a concentration above the GCTL.
- The concentration of 2-methylnaphthalene exceeded its GCTL at DW-5.

ABB-ES concluded that one of the former USTs was the source of petroleum contamination and suggested that leaks, overfills, or spills might have been responsible. The presence of chlorinated compounds suggested that an off-site source might have contributed to site contamination. ABB-ES declined to recommend pumping to enhance recovery because of the possibility of inducing a flow of

contaminants from off-site areas. ABB-ES planned to conduct site screening at Building 139, immediately east of the site, and recommended awaiting the results of that site screening before taking further action at Building 2273. Building 139 was included in the Study Area 30 site screening investigation (HLA, 1998a).

2.3 UTILITY CONSTRUCTION DAMAGE TO MONITORING WELLS

In the spring of 1998, the City of Orlando or its contractors damaged or destroyed several wells during construction activities within a utility corridor located along the southern property line of the Main Base. Harding Lawson Associates (HLA) reported that the destroyed wells included three shallow wells (MW-1, MW-2, and MW-5), four deep wells (DW-1, DW-2, DW-3, and DW-4), and three compliance wells (CW-1, CW-3, and CW-4). HLA recommended that the destroyed wells at Building 2273 be properly abandoned and replaced with new wells (HLA, 1998b).

2.4 ADDITIONAL CONTAMINATION ASSESSMENT, SEPTEMBER 1999 TO SEPTEMBER 2000

TtNUS prepared a Work Plan to abandon the destroyed wells and install two new shallow monitoring wells and three new deep monitoring wells (TtNUS, 1999). The Work Plan provided for one additional shallow well and two additional deep wells if TtNUS and the Orlando Partnering Team (OPT) agreed that they were needed. Table 2-1 presents a summary of monitoring well status.

2.4.1 Objectives and Guidance

The approved TtNUS Work Plan stated the following objectives:

- Properly abandon the eight damaged or destroyed monitoring wells and the four compliance monitoring wells CW-1 through CW-4 (UST monitoring was no longer required).
- Install new monitoring wells to replace the damaged wells and further characterize the extent of contamination.
- Purge and sample the newly installed wells and selected existing wells.

All work was performed following guidance detailed in the *Project Operations Plan for Site Investigation and Remedial Investigations* [POP], Volume I (ABB-ES, 1997c). Health and safety aspects of the work at Building 2273 were controlled in accordance with the *Health and Safety Plan for Completion of Investigative Work and Data Sampling* (B&R Environmental, 1997) and addenda. Appendix D contains a list of TtNUS field personnel.

TABLE 2-1

WELL CONSTRUCTION DETAILS BUILDING 2273

NAVAL TRAINING CENTER ORLANDO, FLORIDA

Well No.	Date Installed	Installation Method	Top of Casing Elevation ^a	A/G Riser Length, if Applicable	Total Well Depth (feet)	Screened Interval (FBGS)	Well Diameter (in.)	Lithology of Screened Interval	Comments
MW-1	07/10/96	HAS	115.32	NA	14	4 - 14	2	Sand	Destroyed
MW-2	07/10/96	HAS	115.14	NA	14	4 - 14	2	Sand	Destroyed
MW-3	07/10/96	HAS	115.22	NA	15	4 - 14	2	Sand	
MW-4	09/24/96	HAS	114.76	NA	15	5 - 15	2	Sand	
MW-5	09/24/96	HAS	115.43	NA	15	5 - 15	2	Sand	Destroyed
MW-6	11/22/96	HAS	114.94	NA	15	5 - 15	2	Sand	Destroyed
MW-7	11/22/96	HAS	114.57	NA	15	5 - 15	2	Sand	
MW-8	09/08/99	HAS	119.37	3	15	5 - 15	2	Sand	
MW-9	09/09/99	HAS	118.68	3	15	5 - 15	2	Sand	
DW-1	09/24/96	mud rotary	115.31	NA	32	27 - 32	2	Sand	Destroyed
DW-2	11/27/96	mud rotary	115.40	NA	45	40 - 45	2	Sand	Destroyed
DW-3	11/27/96	mud rotary	115.30	NA	30	25 - 30	2	Sand	Destroyed
DW-4	06/06/97	mud rotary	115.87	NA	32	27 - 32	2	Sand	Destroyed
DW-5	06/06/97	mud rotary	115.57	NA	32	27 - 32	2	Sand	Dodnoyeu
DW-6	09/22/99	HAS/MR	118.74	3	32	27 - 32	2	Sand	
DW-7	09/22/99	HAS/MR	118.38	3	32	27 - 32	2	Sand	
DW-8	9/8-9/99	HAS/MR	119.60	3	32	27 - 32	2	Sand	· · · · · · · · · · · · · · · · · · ·
DW-9	4/11-12/00	HAS/MR	118.42	3	32	27 - 32	2	Sand	
TW-1	unknown	unknown	unknown	NA	unknown	unknown		Sand	
CW-1	unknown	unknown	115.33	NA	12	unknown	4	Sand	Destroyed
CW-2	unknown	unknown	115.43	NA	14	unknown	4	Sand	
CW-3	unknown	unknown	115.31	NA	13	unknown	4	Sand	Destroyed
CW-4	unknown	unknown	115.39	NA	14	unknown	4	Sand	Destroyed

FBGS - Feet below ground surface

HAS - Hollow stem auger

HAS/MR - Hollow stem auger/mud rotary

NA - Not applicable

(a) HLA assigned an elevation of 100 feet above mean sea level to the MW-1 top of casing and measured the elevations of MW-2 through MW-7 and DW-1 through DW-9 relative to that assigned elevation. TtNUS resurveyed the wells relative to well DW-8.

2.4.2 Well Abandonment

TtNUS planned to abandon the remaining compliance wells and damaged monitoring wells in accordance with the guidelines of the St. John's River Water Management District and Chapter 40A-3 for the F.A.C. Field personnel were unable to locate the wells that were to be abandoned and concluded that the utility crews had removed the upper portions of the casings and backfilled over the former borings. No borings were abandoned. Later, sampling personnel located wells MW-3 and CW-2. The concrete surface pad for well MW-3 had settled and was covered with soil, but the well casing was undamaged. TtNUS recommends that wells MW-3 and CW-2 be abandoned.

2.4.3 New Well Installation

TtNUS installed wells MW-8, MW-9, DW-6, DW-7, and DW-8 in early September 1999. Figure 1-4 shows the locations of the original monitoring and compliance wells and the new monitoring wells installed in September 1999. Shallow wells MW-8 and MW-9 were installed near deep wells DW-6 and DW-7, respectively, to create well pairs. TtNUS installed wells DW-6 and DW-7 downgradient of the former tank pit and DW-8 upgradient of the tank pit to improve the assessment of groundwater flow direction and gradient in the zone below the partially cemented layer at approximately 20 to 27 feet bgs.

Upon review of hydraulic and analytical data from the new wells, the OPT elected to install one additional deep well (DW-9) in the southwest corner of the site. That downgradient location was selected to assist in assessing the groundwater flow regime and provide an additional monitoring point near the site boundary. TtNUS installed well DW-9 on April 11 and 12, 2000, using the same construction as that used at wells DW-6, DW-7, and DW-8. Figure 1-4 shows the locations of all wells installed at the site.

Boring logs and well completion logs are provided as Appendices B and C, respectively. Two-inch-diameter Schedule 40 PVC casings and screens were used for all new wells. Shallow wells have 10 feet of 0.010-inch slotted screen and deep wells have 5 feet of 0.010-inch slotted screen. Deep wells have an outer casing of 6-inch-diameter Schedule 80 PVC grouted into the partially cemented sand layer to prevent groundwater flow between the shallow unconfined aquifer and the deeper, partially confined aquifer. Each new well casing extends approximately 3 feet above grade.

Each of the new wells has a lockable, protective steel casing grouted in place and surrounded by a 3-foot by 3-foot by 6-inch concrete pad. The pads are sloped to drain water away from the protective casings. Each well was developed, labeled, and locked in accordance with the POP (ABB-ES, 1997c).

2.4.4 Soil Sampling

Seven soil samples from the boring for well DW-6 and two soil samples from the boring for well DW-8 were submitted to Universal Engineering Services in Orlando for grain size analyses. The following table shows the sample depths for the grain size samples. The shallower samples from the DW-6 boring and the deeper samples from DW-8 were selected to help characterize the lithology above and below the partially cemented sand layer that separates the unconfined and partially confined aquifers.

SAME	SAMPLES COLLECTED FOR GRAIN SIZE ANALYSIS										
Well Boring Number	Sample Number	Date	Depth (feet below grade)								
DW-6	NTC2273DW60002	9/8/99	0 to 2								
DW-6	NTC2273DW60810	9/8/99	8 to 10								
DW-6	NTC2273DW61012	9/8/99	10 to 12								
DW-6	NTC2273DW61820	9/8/99	18 to 20								
DW-6	NTC2273DW62224	9/8/99	22 to 24								
DW-6	NTC2273DW62628	9/8/99	26 to 28								
DW-6	NTC2273DW62830	9/8/99	28 to 30								
DW-8	NTC2273DW83840	9/9/99	38 to 40								
DW-8	NTC2273DW84042	9/9/99	40 to 42								

The grain size analyses are discussed in Section 3.0. A copy of the laboratory report is presented in Appendix E.

2.4.5 Groundwater Sampling

The new wells (MW-8, MW-9, DW-6, DW-7, DW-8, and DW-9) and existing wells MW-4 and DW-5 were purged and sampled on September 30 through October 2, 1999, in accordance with the Work Plan (TtNUS, 1999) and as required by the POP (ABB-ES, 1997c). Purging employed the micro-flow technique to minimize well disturbance. Where possible, the purge flow rate was kept at or below 100 mL per minute. Samplers monitored temperature, specific conductance, pH, oxidation/reduction potential, dissolved oxygen, and turbidity. Purging continued until each parameter stabilized within limits established in the TtNUS Work Plan or until stopped by the field manager. The manager stopped purging at MW-4 after 165 minutes when all parameters except turbidity had stabilized. Groundwater sample log sheets are enclosed as Appendix F. Chain-of-custody forms are enclosed as Appendix G. All samples were packed on ice and shipped via Federal Express overnight delivery to the analytical laboratory.

Quanterra Environmental Services (Quanterra) in North Canton, Ohio, analyzed the groundwater samples. Samples from all wells were analyzed for Target Compound List (TCL) VOCs. The sample from MW-8

was also analyzed for methyl *tert*-butyl either (MTBE) and TRPH. Samples from wells DW-5 and DW-8 were also analyzed for PAHs.

TtNUS sampled the groundwater in well DW-9 on April 17 and June 12, 2000, using the same purging and sampling techniques employed in earlier sampling. Quanterra analyzed the samples for TCL VOCs using Method 8260B.

TtNUS sampled wells MW-4, MW-8, MW-9, DW-5, DW6, DW-7, DW-8, and DW-9 on November 30, 2000, using the same purging techniques as in previous events and forwarded the samples to Severn Trent Laboratory for analysis. Each sample was analyzed for TCL VOCs, and the sample from well DW-8 was analyzed for MTBE using SW-846 Method 8260B. The sample from well DW-8 was analyzed for PAHs using SW-846 Method 8310 and for TRPH using the Florida PRO method.

Organic data validation was conducted in accordance with *USEPA Contract Laboratory Program: National Functional Guidelines for Organic Data Review* (USEPA, 1999). Sampling results are discussed in Section 3.0. Appendix H presents the validated analytical data from sampling performed by TtNUS.

No free product has been detected in wells at the site since the February 1996 detection in temporary well TW-1.

2.4.6 <u>Surveying</u>

A registered surveyor from the firm of Donaldson, Garrett & Associates surveyed the horizontal position (northing and easting), top of casing elevation, and ground surface elevation of each of the new wells. A TtNUS registered geologist measured the elevations of the tops of well casings installed by ABB-ES relative to well DW-8 on September 18, 2000, to provide actual elevations for all remaining wells. The survey data are provided in Appendix I.

3.0 RESULTS OF INVESTIGATIONS

3.1 SITE-SPECIFIC HYDROGEOLOGY

3.1.1 <u>Lithology</u>

Borings revealed gray, brown, and black fine sands from the ground surface to a depth of 30 feet bgs. From 20 to 27 feet bgs, the sand was dense and appeared to be partially cemented with iron oxide. A gray to olive-green clayey sand was present from 30 to 47 feet bgs. Borings at an adjacent site, Study Area 39, indicated that the upper sediments of the Hawthorn Group lie about 80 feet bgs. TtNUS collected samples for grain size analysis during the installation of deep wells DW-6 and DW-8. The results are presented in Table 3-1.

3.1.2 Aquifer Characteristics

ABB-ES reported the following observed and calculated hydraulic characteristics for the site (ABB-ES, 1997a).

- The groundwater flow direction is generally from east-northeast to west-southwest.
- The hydraulic gradient is approximately 1.06 x 10⁻² feet per foot.
- The hydraulic conductivity is estimated to be 3.29 feet per day.
- The assumed groundwater flow velocity is 36.5 feet per year.
- The transmissivity is 861 gallons per day per foot.

Table 3-2 is a summary of groundwater elevation measurements. Figures 3-1 and 3-2 are groundwater elevation contour maps based on measurements made on November 30, 2000. Previous groundwater elevation data prepared using measurements from deep wells DW-1, DW-2, DW-3, DW-4 and DW-5 showed a west or southwest flow direction in the deep aquifer zone that was similar to the shallow aquifer zone flow direction. Recent groundwater elevation data (i.e., September 2000) prepared using measurements from deep wells DW-5, DW-6, DW-7, DW-8, and DW-9 indicate a southeast flow direction in the deep zone that differs from the shallow aquifer zone (see Figures 3-1 and 3-2).

The aquifer interval monitored by the deep monitoring wells (i.e., 27 to 32 feet bgs) is described as a cemented sand that grades downward into a sandy clay. As such, the material in which the deep wells are screened appears to have lower conductivity than the overlying zone in which the shallow wells are screened. Grain size analysis data (Table 3-1), the boring log from deep well DW-8, and observations of the deeper strata from other sites at the Main Base that have deep borings/wells indicate that a more

TABLE 3-1

GRAIN SIZE ANALYSES BUILDING 2273

NAVAL TRAINING CENTER ORLANDO, FLORIDA

VAZ=R Aleman									
Well Number	DW-6	DW-6	DW-6	DW-6	DW-6	DW-6	DW-6	DW-8	DW-8
Sample Depth (feet)	0 - 2	8 - 10	10 - 12	18 - 20	22 - 24	26 - 28	28 - 30	38 - 40	40 - 42
Sieve Number			Per		ple Passing		ieve	00 40	40 - 42
3.4 inch	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number 4	100.0	99.8	100.0	100.0	100.0	100.0	100.0	100.0	97.8
Number 10	99.5	99.5	100.0	100.0	100.0	100.0	100.0	100.0	97.8
Number 40	94.7	94.2	97.5	96.2	92.3	95.9	96.8		
Number 60	71.2	66.3	76.2	63.4	48.6	75.3	88.5	99.6	94.2
Number 100	19.7	12.8	13.7	14.1	10.9	30.5		96.4	77.4
Number 200	6.3	11.1	4.5	5.3	4.8		66	58	31.9
	<u> </u>		7.5		ner Paramet	12.5	44.1	11.6	8.5
Mointure Content (0()					ier Paramei	ers			
Moisture Content (%)	9.4	8.4	21.2	21.4	19.8	19.2	23	30.7	14
% Gravel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
% Sand	93.7	88.7	95.5	94.7	95.2	87.5	55.9	88.4	89.3
% Silt and Clay	6.3	11.1	4.5	5.3	4.8	12.5	44.1	11.6	
				3.0		12.0	74.1	11.0	8.5

0100024

TABLE 3-2

GROUNDWATER ELEVATIONS SUMMARY BUILDING 2273

NAVAL TRAINING CENTER ORLANDO, FLORIDA

PAGE 1 OF 3

		Total	Screen	TOC		2/9/96	1/21/97		2/12/97		6/24/97	
Well	Well	Depth	Interval	Elevation	Depth to	Groundwater						
	Туре	(BGS)	(BGS)	(AMSL) ^(a)	Water	Elevation	Water	Elevation	Water	Elevation	Water	Elevation
1004					(BTOC)	(AMSL)	(BTOC)	(AMSL)	(BTOC)	(AMSL)	(BTOC)	(AMSL)
MW-1	2" well	14	4-14	115.32	8.45	106.87	9.33	105.99	9.65	105.67	9.80	105.52
MW-2	2" well	14	4-14	115.14	8.30	106.84	9.19	105.95	9.51	105.63	9.68	105.46
MW-3	2" well	15	4-14	115.22	7.77	107.45	8.60	106.62	8.90	106.32	8.94	106.28
MW-4	2" well	15	5-15	114.76	7.33	107.43	8.14	106.62	8.41	106.35	8.36	106.40
MW-5	2" well	15	5-15	115.43	8.51	106.92	9.36	106.07	9.61	105.82	9.80	105.63
MW-6	2" well	15	5-15	114.94	7.91	107.03	8.81	106.13	9.17	105.77	9.21	105.73
MW-7	2" well	15	5-15	114.57	7.03	107.54	7.84	106.73	8.13	106.44	7.94	106.63
MW-8	2" well	15	5-15	119.37	NI		NI		NI		NI	
MW-9	2" well	15	5-15	118.68	NI		NI		NI.		NI	
DW-1	2" well	32	27-32	115.31	12.15	103.16	12.88	102.43	13.15	102.16	13.34	101.97
DW-2	2" well	45	40-45	115.40	13.13	102.27	13.95	101.45	14.19	101.21	13.50	101.90
DW-3	2" well	30	25-30	115.30	9.75	105.55	10.61	104.69	10.93	104.37	11.31	103.99
DW-4	2" well	32	27-32	115.87	NI		NI		NI		13.04	102.83
DW-5	2" well	32	27-32	115.57	NI		NI		NI		11.84	103.73
DW-6	2" well	32	27-32	118.74	NI		NI		NI		NI	
DW-7	2" well	32	27-32	118.38	NI		NI		NI		NI	
DW-8	2" well	32	27-32	119.60	NI		NI		NI		NI	
DW-9	2" well	32	27-32	118.42	Ni		NI		NI		NI	
CW-1	4" well	12	NA	115.33	8.46	106.87	9.35	105.98	9.71	105.62	9.88	105.45
CW-2	4" well	14	NA	115.43	7.84	107.59	8.63	106.80	8.92	106.51	8.84	106.59
CW-3	4" well	13	NA	115.31	8.40	106.91	9.26	106.05	9.60	105.71	9.72	105.59
CW-4	4" well	14	NA	115.39	7.74	107.65	8.41	106.98	8.62	106.77	8.46	106.93

TABLE 3-2

GROUNDWATER ELEVATIONS SUMMARY BUILDING 2273

NAVAL TRAINING CENTER ORLANDO, FLORIDA

PAGE 2 OF 3

	Well	Total	Screen	TOC		/30/99		/18/00	11/30/00		
Well	Well	Depth	Interval	Elevation	Depth to		Depth to	Groundwater	Depth to	Groundwater	
-	Туре	(BGS)	(BGS)	(AMSL) ^(a)	Water	Elevation	Water	Elevation	Water	Elevation	
NAVA 4					(BTOC)	(AMSL)	(BTOC)	(AMSL)	(BTOC)	(AMSL)	
MW-1	2" well	14	4-14	115.32	DES		DES		DES		
MW-2	2" well	14	4-14	115.14	DES		DES		DES		
MW-3	2" well	15	4-14	115.22	8.37	106.85	NM		NM		
MW-4	2" well	15	5-15	114.76	6.99	107.77	7.88	106.88	9.00	105.76	
MW-5	2" well	15	5-15	115.43	DES		DES		DES	100.70	
MW-6	2" well	15	<u>5-15</u>	114.94	NM		8.73	106.21	10.00	104.94	
MW-7	2" well	15	5-15	114.57	NM		7.30	107.27	8.45	106.12	
MW-8	2" well	15	5-15	119.37	11.97	107.40	13.27	106.10	14.50	104.87	
MW-9	2" well	15	5-15	118.68	17.53	101.15	12.35	106.33	13.54	105.14	
DW-1	2" well	32	27-32	115.31	DES		DES		DES	100.14	
DW-2	2" well	45	40-45	115.40	DES		DES		DES		
DW-3	2" well	30	25-30	115.30	DES		DES		DES		
DW-4	2" well	32	27-32	115.87	DES		DES		DES		
DW-5	2" well	32	27-32	115.57	10.22	105.35	11.29	104.28	12.31	103.26	
DW-6	2" well	32	27-32	118.74	15.76	102.98	17.14	101.60	18.07	100.67	
DW-7	2" well	32	27-32	118.38	15.37	103.01	16.64	101.74	17.59	100.79	
DW-8	2" well	32	27-32	119.60	16.96	102.64	18.26	101.34	19.19	100.41	
DW-9	2" well	32	27-32	118.42	NI		15.93	102.49	16.88	101.54	
CW-1	4" well	12	NA	115.33	DES		DES		DES	101.54	
CW-2	4" well	14	NA	115.43	NM		NM		NM		
CW-3	4" well	13	NA	115.31	DES		DES		DES		
CW-4	4" well	14	NA	115.39	DES		DES		DES		

TABLE 3-2

GROUNDWATER ELEVATIONS SUMMARY BUILDING 2273

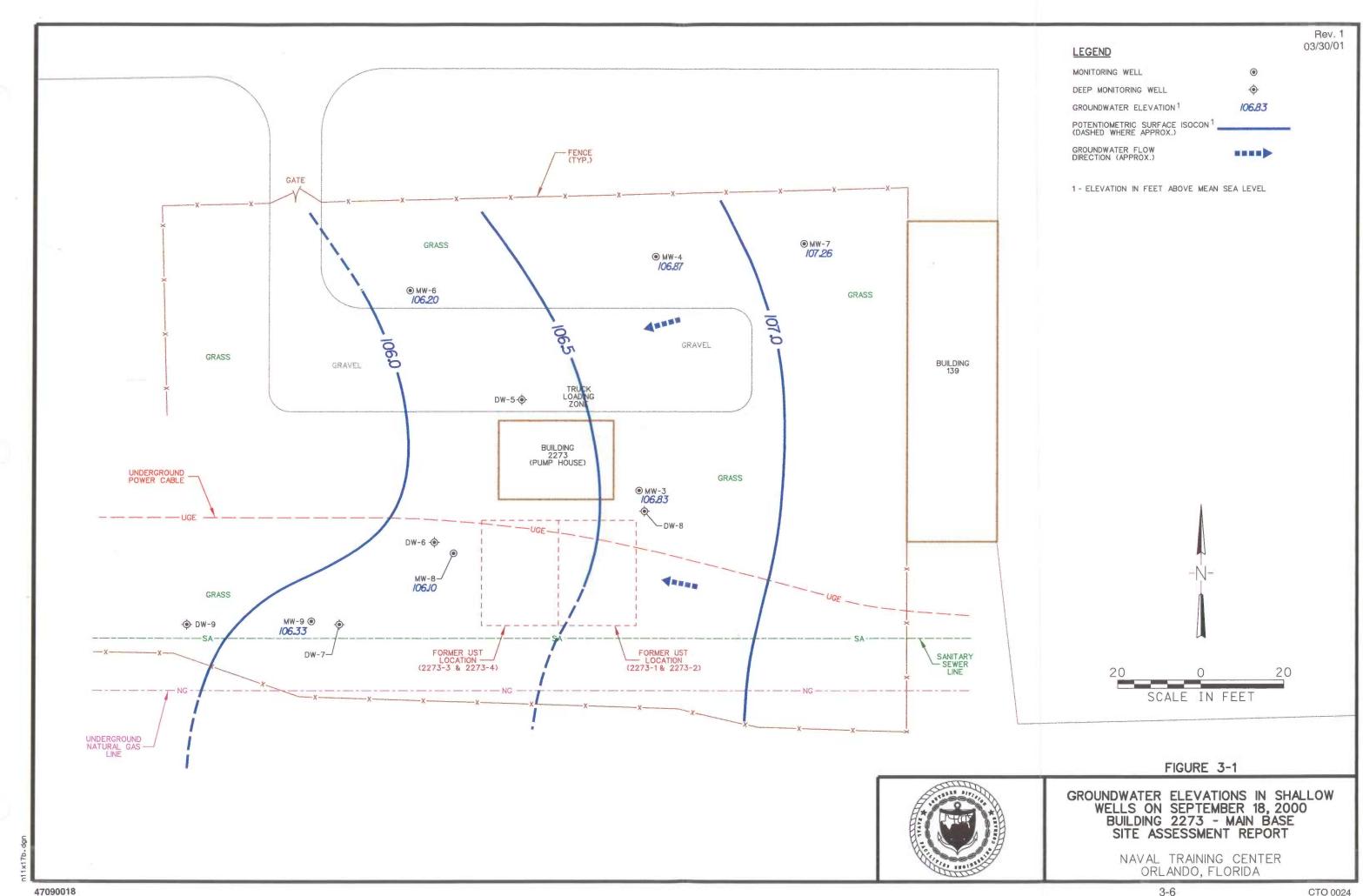
NAVAL TRAINING CENTER ORLANDO, FLORIDA

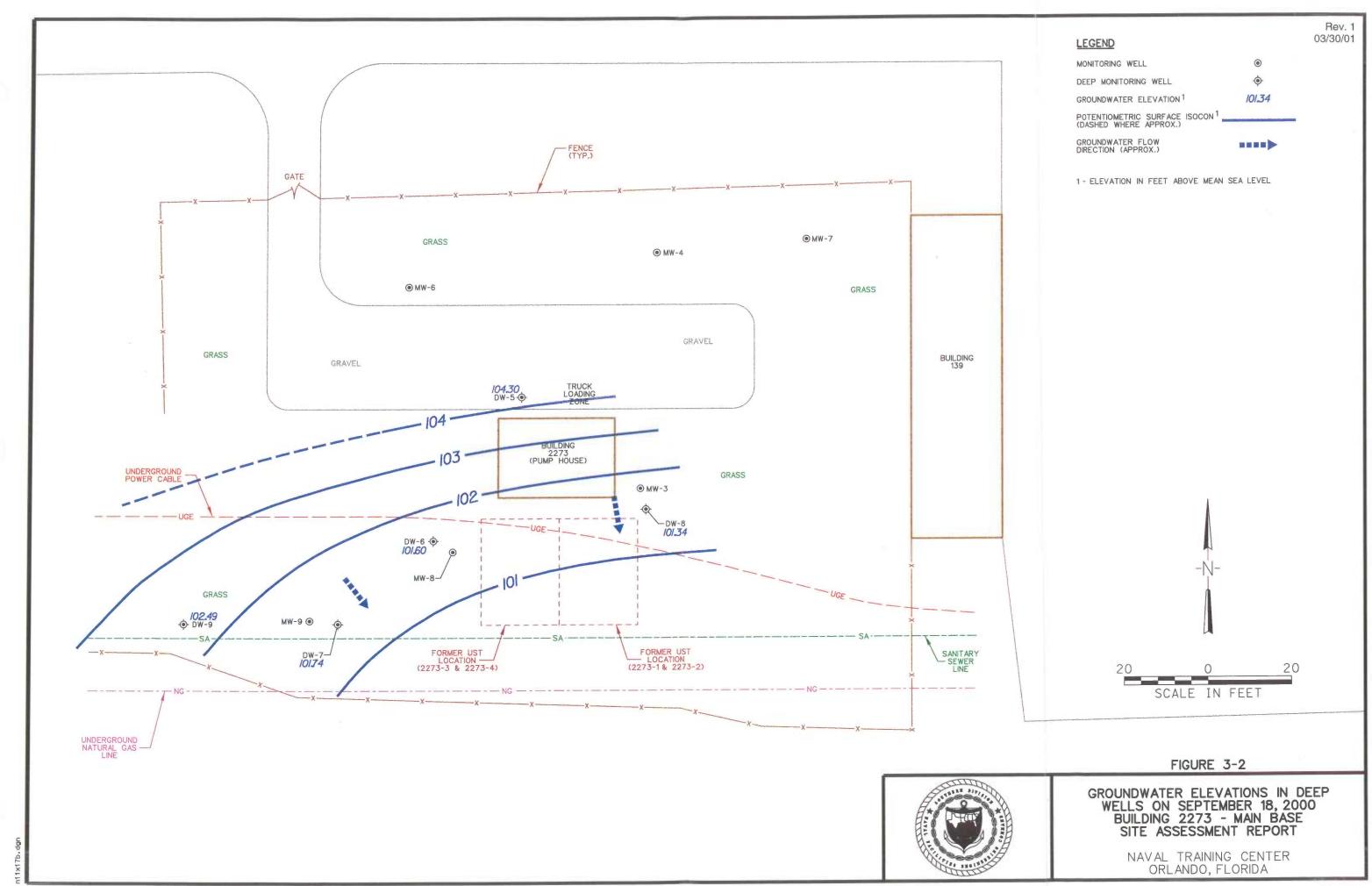
PAGE 3 OF 3

All measurements are in units of feet. AMSL - Above mean sea level BGS - Below ground surface BTOC - Below top of casing NM - Not measured NI - Not installed **DES - Destroyed**

NA - Not available

(a) HLA assigned an elevation of 100 feet AMSL to the TOC at MW-1 and measured the elevations of MW-2 through MW-7, DW-1 through DW-5, and CW-1 through CW-4 relative to that elevation. TtNUS resurveyed five of these wells relative to DW-8 and adjusted all of the arbitrary TOC elevations accordingly.





47090018

sandy and more permeable aquifer zone lies below the deep aquifer wells at Building 2273. Using this hydrogeologic model, it is likely that the zone monitored by the deep wells represents a low conductivity zone in which the predominant groundwater flow direction is vertical, from the shallow to deeper aquifer zones. This is supported by calculations of the vertical and horizontal gradients at the site as shown in the table below. The gradient data show that the vertical gradient (0.22) in the deep aquifer zone is greater than the horizontal gradient (0.08). Therefore, the horizontal flow direction indicated by the potentiometric contours in Figure 3-2 for the deep aquifer zone represent the horizontal component of flow for that aquifer interval, but not the predominant flow direction, which is downward.

	VERTICAL GRADIENT CALCULATIONS										
Shallow Well Deep Well	Shallow Well Groundwater Elevations (feet)	Deep Well Groundwater Elevations (feet)	Vertical Distance ^(a) (feet)	Vertical Gradient							
^(b) DW-5	105.15	103.26	19.5	-0.10							
MW-8 DW-6	104.87	100.67	19.5	-0.22							
MW-9 DW-7	105.14	100.79	19.5	-0.22							

НС	HORIZONTAL GRADIENT CALCULATIONS											
Aquifer Zone	Upgradient Well Groundwater Elevations (feet)	Downgradient Well Groundwater Elevations (feet)	Horizontal Distance (feet)	Horizontal Gradient								
Shallow (MW-7 to MW-6)	106.12	104.94	96	0.01								
Deep (DW-5 to 100 ft contour) ^(c)	103.26	100	40	0.08								

⁽a) Distance is difference between mid-point of well screens.

3.2 SOIL QUALITY

ABB-ES subjected approximately 78 soil samples collected from areas surrounding the tanks, product lines, and vent lines to organic vapor analyses. No significant petroleum contamination was observed outside a small soil volume near product and vent lines. Approximately 2 cubic yards of stained soil was removed from the area. ABB-ES also documented the pre- and post-burn testing of soils removed from the tank pit (ABB-ES, 1997b). The investigations have shown no evidence of other soil contamination at the site.

⁽b) Shallow aquifer zone interpolated from potentiometric map contours.

⁽c) Distance from well DW-5 to 100-foot potentiometric contour line on map.

3.3 GROUNDWATER QUALITY

Chapter 62-770.680 F.A.C. requires that investigators use the lower of the groundwater and surface water GCTLs if contaminated groundwater at a site is likely to adversely impact nearby surface water. The low concentrations observed near Building 2273 are unlikely to affect surface water, so the groundwater GCTLs published May 26, 1999 (FDEP, 1999a), are applicable in the discussions below.

3.3.1 Investigations Prior to 1998

In early 1997, attention was focused on the results from wells DW-1 and DW-2. These wells, which were installed in a small area just west of the former tank pit, contained elevated concentrations of ethylbenzene, total VOCs, and total xylenes above screening criteria. Concentrations in well DW-1 declined significantly between October 1996 and June 1997, while concentrations in DW-2 changed little. Benzene concentrations in wells MW-4 and DW-2 exceeded the GCTL in late 1996. The only benzene exceedance observed in the June 1997 sampling event was in well DW-2 (a concentration of 3.3 μ g/L versus a GCTL of 1 μ g/L); however, MW-4 was not sampled at this time. The June 1997 sampling also revealed a 2-methylnaphthalene exceedance in well DW-5 (a concentration of 22 μ g/L versus a GCTL of 20 μ g/L). Lead was observed in well DW-3 at a concentration of 15 μ g/L (equal to the GCTL and slightly higher than the background concentration of 14.5 μ g/L) and in well CW-1 at a concentration of 19.5 μ g/L during sampling in August 1995. Figures 3-3 and 3-4 show all GCTL exceedances observed during the investigations.

The results of the site screening investigation at SA 30 (HLA, 1998a), located immediately east of Building 2273, indicate that this site is not a source area for the contaminants found in the groundwater at Building 2273. SA 30 includes Building 139, the former pesticide mixing facility. Monitoring well OLD-30-4 is located near Building 139 and analytical data show that no pesticides were detected above screening criteria. Groundwater at SA 30 generally flows to the northwest and parts of the site are upgradient of Building 2273. Analytical data show that no VOCs or PAHs found at Building 2273 were detected in any of the monitoring wells at SA 30.

An environmental investigation was performed at Study Area 39, located just to the west of Building 2273. The Site Investigation Report for Study Area 39 (TtNUS, 2000) indicates that groundwater generally flows to the southeast and parts of this site could be considered upgradient of Building 2273. Analytical data show that, except for chloroform, no VOCs or PAHs found at Building 2273 were detected above screening criteria in any of the monitoring wells at SA 39. Tetrachloroethene, which is primary groundwater contaminant at SA 39, was not detected in any groundwater samples at Building 2273. Therefore this site is not a source area for the contaminants found in the groundwater at Building 2273.

3.3.2 <u>Investigations After 1998</u>

September/October 1999

Concentrations of methylnaphthalene isomers in DW-5 slightly exceeded GCTLs and benzene exceedances were noted in wells DW-7 and DW-9 (5.8 μ g/L and 1.2 μ g/L), respectively, versus a GCTL of 1 μ g/L. Benzene was also found at an estimated concentration (1J μ g/L) equal to the GCTL in MW-4. Wells DW-7 and DW-9 are near the southwest corner of the site. The concentration of total xylenes (100 μ g/L) exceeded the GCTL of 20 μ g/L in well DW-6.

April 2000

DW-9 was the only well sampled during this event, and benzene was detected at a concentration of 1.2 μ g/L, exceeding the GCTL of 1 μ g/L.

June 2000

Benzene was again detected in well DW-9 (the only well sampled), but at a concentration of 0.45J $\mu g/L$, less than the GCTL of 1 $\mu g/L$.

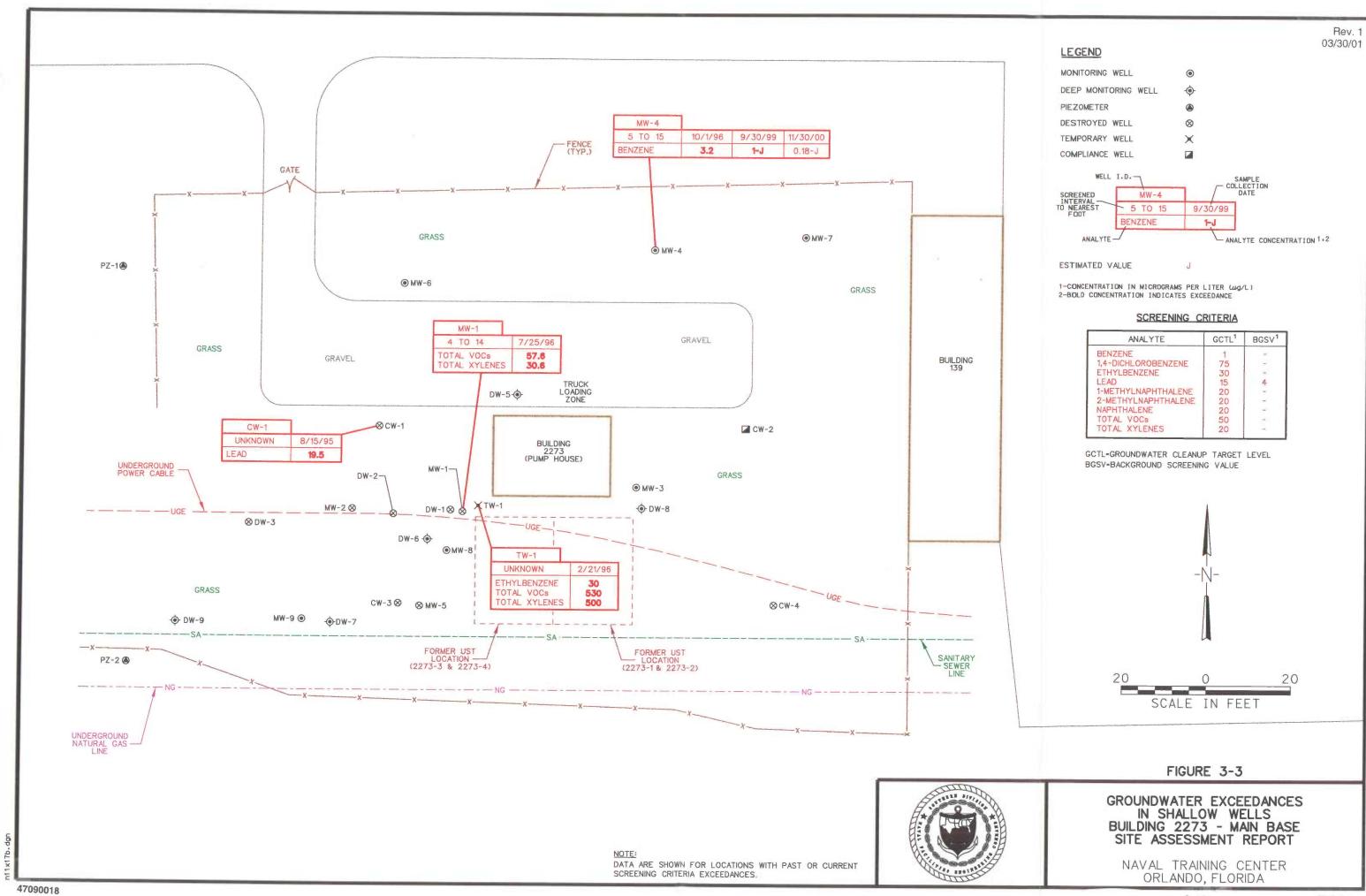
November 2000

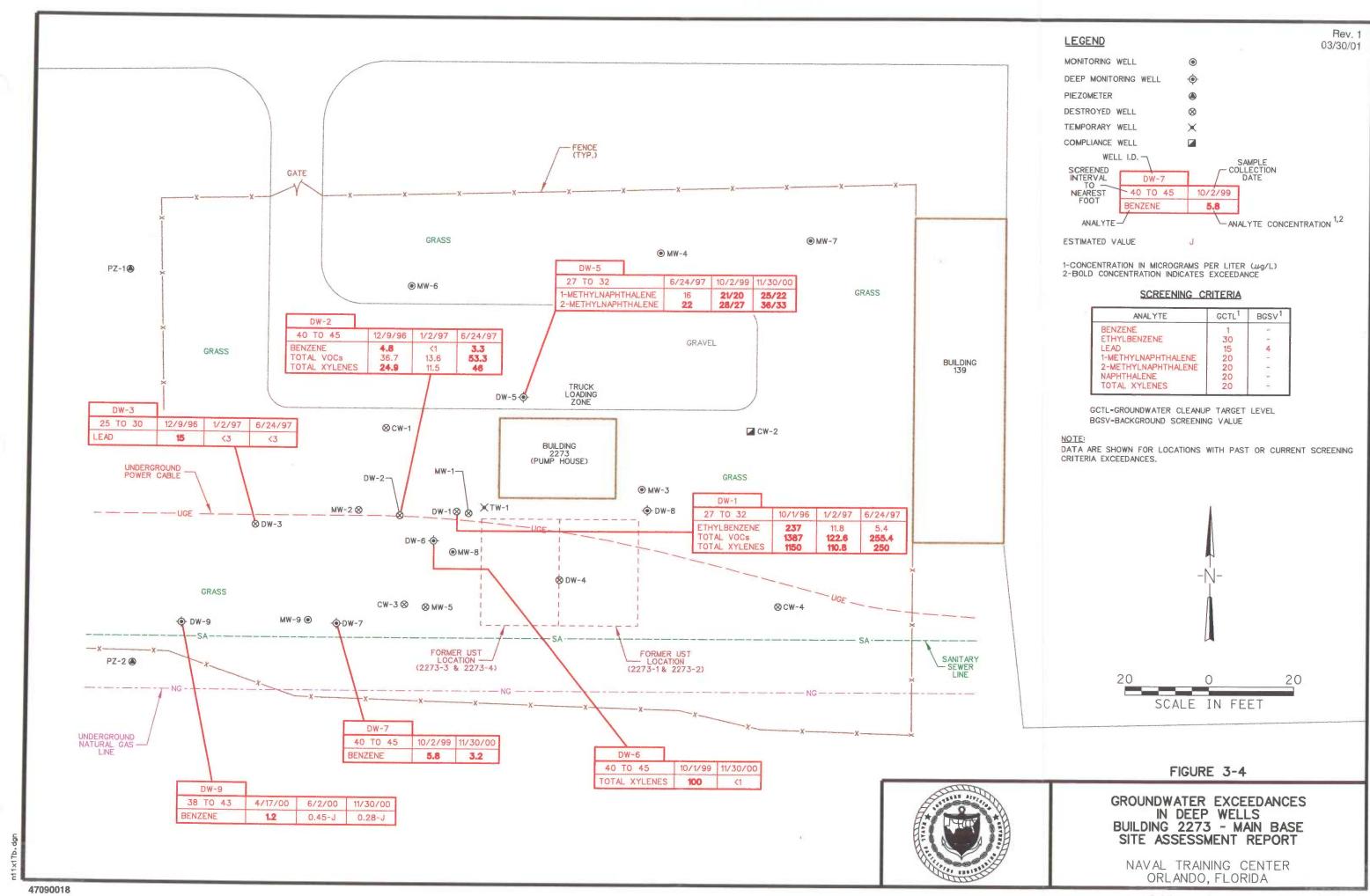
Concentrations of methylnaphthalene isomers observed in well DW-5 again exceeded GCTLs. The concentration of benzene in well DW-7 (3.2 μ g/L) exceeded the GCTL of 1 μ g/L, but was lower than that observed in October 1999 (5.8 μ g/L).

3.3.3 Groundwater Quality Summary

Groundwater sampling revealed elevated concentrations of contaminants, especially benzene, downgradient of the former tank pit. The only observed upgradient GCTL exceedances are the October 1999 and November 2000 detections of methylnaphthalene isomers in well DW-5. Sampling conducted in late 1999 and 2000 suggests that remaining significant groundwater contamination exists only in the southwest corner of the site, where benzene concentrations in wells DW-7 (October 1999 and November 2000) and DW-9 (April 2000, but not June or November 2000) exceeded the GCTL. As ABB-ES suggested, the former tank pit probably is the source of contamination, but no contaminant has been observed in a pattern suggesting a plume.

All observed detections and GCTL exceedances are presented in Table 3-3. Appendix H contains all analytical data obtained by ABB-ES and TtNUS.





CTO 0022

TABLE 3-3

GROUNDWATER ANALYTICAL RESULTS AUGUST 1995 THROUGH NOVEMBER 2000

NAVAL TRAINING CENTER ORLANDO, FLORIDA

PAGE 1 OF 5

WELL DESIGNATION	CAS	Screening	Criteria ^(a)	TW-1	MW-1	MW-2	MW-3	T	MW-4		MW-5	MW-6
SAMPLE DATE	Number	Florida GCTL ^(b)	NTC BGSV (c)	2/21/96	7/25/96	7/25/96	7/25/96	10/1/96	9/30/99	11/30/00	10/1/96	12/9/96
Volatiles (µg/L)			Barra .								file to the second	ويتدافيدروقار فساداد و
Acetone	67-64-1	700		a dici . Montae cultura di mana di man	Billion Salar Salar Ballion (1977) Anna Anna Salar Salar	Alban Valence and all filled and a state of an area of	& Reducero alike some street as all	Entre of make many partition	Maria and Maria and Maria Andrews of the Control of	the same of the same and same	ka i jama'a anali i ang sa	e seles della comme
Benzene	71-43-2	1					T	3.2	1.1	0.18J		
2-Butanone	78-93-3	4,200			<u> </u>				48J	0.165 0.4J		
Carbon disulfide	75-15-0	700			 		 		400	0.45		
Chlorobenzene	108-90-7	100		<u> </u>			 	22.9	16	3.9		
Chloroform	67-66-3	5.7		NA				22.5	10	3.9		3.7
1,2-Dichlorobenzene	95-50-1	600			 		 		NA NA	NA		
1,4-Dichlorobenzene	106-46-7	75					 -		NA NA	NA NA		
cis-1,2-Dichloroethene	156-59-2	70				 			INA	- NA		
Ethylbenzene	100-41-4	30		30	27							
Methyl tert-butyl ether	1634-04-4	50							NA	NA NA		
Toluene	108-88-3	40							INA			
Total VOCs		50 ^(d)		530	57.6		<u> </u>	3.2	1	0.14J 0.32		
Total Xylenes	1330-20-7	20		500	30.6			5.2	<u> </u>	0.32		
1,1,1-Trichloroethane	71-55-6	200		III MA CAROLAGO	No. by C. Co. Co. Spinster.							
Trichloroethene	79-01-6	3	·	NA								
Atts (µg/L)	National States		The second		Mark Control	Liver to a draw	Service Services				Promote and the second	The same of the sa
cenaphthene	83-32-9	20	3165 TH. 169 ES	2000	Address Selection in the selection		n de la via			A VA		in the second
-Methylnaphthalene	90-12-0	20										
-Methylnaphthalene	91-57-6	20										
laphthalene	91-20-3	20										
RPH (mg/L)				NA NA		A CONTRACTOR OF THE STATE OF TH		No. 2000 120 0.88	NA	NA .		The second second
RPH	A CONTRACTOR OF THE STATE OF TH	5,000	terior in Marina de la tradición de	***	5.05	0.19	0.14	3.7	NA	NA		on the state of the state of
norganics (µg/L)				NA		0.19			The state of the s		والمراجع والمراجع المراجع	1.5
ead.	7439-92-1	15	14.5	· · · · · · · · · · · · · · · · · · ·	4.8	3.5	6.3		NA	NA	American Commence	
	<u> </u>				4.0	3.5	0.3		L			8

CTO 002

TABLE 3-3

GROUNDWATER ANALYTICAL RESULTS AUGUST 1995 THROUGH NOVEMBER 2000

NAVAL TRAINING CENTER ORLANDO, FLORIDA

PAGE 2 OF 5

WELL DESIGNATION	CAS	Screening	Criteria ^(a)	MW-7	MV	V-8	MV	V-9		DW-1		<u> </u>	DW-2	
SAMPLE DATE	Number	Florida GCTL ^(b)	NTC BGSV ^(c)	12/9/96	10/1/99	11/30/00	10/2/99	11/30/00	10/1/96	1/2/97	6/24/97	12/9/96	1/2/97	6/24/97
Volatiles (µg/L)		TERRITORIES ENGINEERS	there is the second	Bridge and the Care of	korskuri divi sa									The second secon
Acetone	67-64-1	700												*** **** \\ \ \ \ \ \ \ \ \ \ \ \ \ \ \
Benzene	71-43-2	1										4.8		3.3
2-Butanone	78-93-3	4,200											_	
Carbon disulfide	75-15-0	700								-				
Chlorobenzene	108-90-7	100										39	12.7	29.9
Chloroform	67-66-3	5.7					0.89J							
1,2-Dichlorobenzene	95-50-1	600			NA	NA	NA	NA						
1,4-Dichlorobenzene	106-46-7	75			NA	NA	NA	NA			· · · · · ·			
cis-1,2-Dichloroethene	156-59-2	70												-
Ethylbenzene	100-41-4	30							237.	11.8	5.4	7	2.1	4
Methyl tert-butyl ether	1634-04-4	50					NA	NA						
Toluene	108-88-3	40		-										· · · · · · · · · · · · · · · · · · ·
Total VOCs		50 ^(d)							1,387	122.6	255.4	36.7	13.6	53.3
Total Xylenes	1330-20-7	20							1,150	110,8	-250	24.9	11.5	46
1,1,1-Trichloroethane	71-55-6	200				0.42J				A RESCUENCE COMPANY		4 • 6 • 6 • 6 • 6 • 6 • 6 • 6 • 6 • 6 • 6		See and America
Trichloroethene	79-01-6	3	, , , , , ,			2.6								
PAHs (μg/L)	20.00 20.00 20.00	Programme	Mes de		» NA	NA 1	NA	NA		NA		ivasio esa	NA a	164
Acenaphthene	83-32-9	20						Marine in the Part of the Res	2,10,20,000,000,000	N. H Co militaria.		Service Company of the Company of th	As The	10000
1-Methylnaphthalene	90-12-0	20		6			-				·			
2-Methylnaphthalene	91-57-6	20		8										
Naphthalene	91-20-3	20						·						
TRPH (mg/L)		en en general de la company de la company La company de la company d				NA	NA	a NA		NA			NA .	
TRPH	,	5,000	and the second of the second	3.6	or the State of the	0.66J	and the control of th	<u> </u>		tion and the second second second second	S	***	2360-04-16-17-44-4	En according to additional
Inorganics (µg/L)					NA I		NA	NA	20.3.13				25.00	
Lead	7439-92-1	15	14.5	5				- A 100 00			Alexandria (18 September 1964)	11	Constitution in the Park	te en antique en

TABLE 3-3

GROUNDWATER ANALYTICAL RESULTS AUGUST 1995 THROUGH NOVEMBER 2000

NAVAL TRAINING CENTER ORLANDO, FLORIDA

PAGE 3 OF 5

WELL DESIGNATION	CAS	Screening	Criteria (a)		DW-3		DW-4			DW-5				N-6
SAMPLE DATE	Number	Florida GCTL ^(b)	NTC BGSV (c)	12/9/96	1/2/97	6/24/97	6/24/97	6/24/97	10/2/99	10/2/99 Duplicate	11/30/00	11/30/00 Duplicate	10/1/99	11/30/0
Volatiles (µg/L)										Suprodic		Duplicate	Proceedings	
Acetone	67-64-1	700		Cartainty - Co., Pt. postdoct 3o., call cash, all	Million de la company de la co	Marie - a se i mai di dicina Malaina	Beetler, commission wash to a security with	S Brothermon, a Secund	Andrew with the source of the	Server and Leave Bridge &	Bound to the said	ent and the transfer of a second dispersion of	83J	A CONTRACTOR
Benzene	71-43-2	1				-		 			 		030	0.101
2-Butanone	78-93-3	4,200									 			0.12J
Carbon disulfide	75-15-0	700						 	f		 		 	
Chlorobenzene	108-90-7	100		2			·—·				 			0.05.1
Chloroform	67-66-3	5.7		5.4						·	 		0.71J	0.35J
1,2-Dichlorobenzene	95-50-1	600		110		42.8			NA	NA NA	NA	NA	0.713 NA	
1,4-Dichlorobenzene	106-46-7	75	·	4.9					NA NA	NA NA	NA NA	NA NA		NA NA
cis-1,2-Dichloroethene	156-59-2	70							INA	IVA	INA	NA NA	NA	NA
Ethylbenzene	100-41-4	30		-			3.7	·						
Methyl tert-butyl ether	1634-04-4	50	***						NA	NA	NA	NA NA		0.3J
oluene	108-88-3	40					··········		11/4	INA	INA	INA	NA	NA
otal VOCs		50 ^(d)					15.7					 .	***	
Total Xylenes	1330-20-7	20				·· ·	12			·			100	0.42
,1,1-Trichloroethane	71-55-6	200			 -		12						100	
richloroethene	79-01-6	3												
AHE (ne/L)	200716	100,000	100		NA I	W CONTRA	Ant Vi	ENGLES OF	NE CONTRA		POST STATE			V S D S T T T T T T T T T T T T T T T T T
cenaphthene	83-32-9	20				anti na i consisti di		Mac Could Indian Could		O. Harris	0,55J		1/2	Marina S
-Methylnaphthalene	90-12-0	20						16	21	20	25	22		
-Methylnaphthalene	91-57-6	20						22	28	27	36	2007		
laphthalene	91-20-3	20						8	15	14	12	33		
RPH (mg/L)					NA				NA NA	NA	NA 👙	11		Transaction of the
RPH		5,000	the time to be a superior to the superior of the superior to t	er for detect of the control of the		en i man man de la como de la com	ation and a second case &		NA .	INA	NA	NA	NA	NA
norganics (µg/L)			Extra Tay	X25.			andy saig		NA	NA	NA WEE		the filter of the second of the	185 YO Z 100 15-0 3
ead	7439-92-1	15	14.5	15	alkini karanca <u>.</u> Salika	to to more described raise.	a, or included the B	kee Nobel of James 1		Shares and Programs	NA	NA	NA :	NA -

TABLE 3-3

GROUNDWATER ANALYTICAL RESULTS AUGUST 1995 THROUGH NOVEMBER 2000

NAVAL TRAINING CENTER ORLANDO, FLORIDA

PAGE 4 OF 5

WELL DESIGNATION	CAS	Screening	Criteria (a)	DV	V-7	D۷	V-8		DW-9	
SAMPLE DATE	Number	Florida GCTL ^(b)	NTC BGSV (c)	10/2/99	11/30/00	10/1/99	11/30/00	4/1,7/00	6/2/00	11/30/00
Volatiles (μg/L)			Professional Laboratory and State of St	to the state of th		s x				
Acetone	67-64-1	700		23J				13J		
Benzene	71-43-2	1		5.8	3.2	0.71		1.2	0.45J	0.28J
2-Butanone	78-93-3	4,200						2.3J		
Carbon disulfide	75-15-0	700						0.75J	0.32J	
Chlorobenzene	108-90-7	100		1.3	0.75J	11		9.8	8.2	5
Chloroform	67-66-3	5.7		0.23		0.14J		1,1		
1,2-Dichlorobenzene	95-50-1	600		NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	106-46-7	75		NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	156-59-2	70		0.12J	0.11J		•			<u> </u>
Ethylbenzene	100-41-4	30		0.36J	0.25J	1.2		1.4	1.6J	1.8
Methyl tert-butyl ether	1634-04-4	50		NA	NA	NA	NA	NA	NA	NA
Toluene	108-88-3	40			0.16J	0.15J			•	
Total VOCs		50 ^(d)		7.1	3.61	11.26		6.6	6.15	3.58
Total Xylenes	1330-20-7	20		0.94		9.2		4	4.1	1.5
1,1,1-Trichloroethane	71-55-6	200						-		
Trichloroethene	79-01-6	3				****				
PAHs (µg/L)	Part The Land			NA	NA			NA .	NA .	NA.
Acenaphthene	83-32-9	20					IVA CALIFORNIA (Value de la companio	Marie Marie Contact State Cont	Monda K.S. Letter to the And Let	Contract Con
1-Methylnaphthalene	90-12-0	20								
2-Methylnaphthalene	91-57-6	20							•	
Naphthalene	91-20-3	20				0.4J				
TRPH (mg/L)				NA	NA	NA	NA	NA	NA	NA -
TRPH		5,000		e et como en colonidad de la como en c	arrana da ar arasa ara saka da	enterior to the second production	parameter and the second secon	the state of the s	Bernandon ar os antigologo	e per configura en de procesa está de plana
Inorganics (µg/L)				NA	NA	NA	'NA	NA	NA	NA
Lead	7439-92-1	15	14.5	the time to the dame for a 11 feet of a sil	w ministerior maning	Construction of the second	the second second second	the sales of the s	no ev <u>je je je</u> lek	Profit in the second

TABLE 3-3

GROUNDWATER ANALYTICAL RESULTS AUGUST 1995 THROUGH NOVEMBER 2000

NAVAL TRAINING CENTER ORLANDO, FLORIDA

PAGE 5 OF 5

- CAS	Screening	Criteria ^(a)	CW-1	CW-2	CW-3	CW-4
	Florida	NTC	0/4.5/05	24-1		
Number	GCTL ^(b)	BGSV (C)	8/15/95	8/15/95	8/15/95	8/15/95
67-64-1	700	The second secon	Service althoughts and it is not as an account which	ks Zinse en sementen ing	Service Control of the Control of the	Lie Dine of Street Control
71-43-2	1				· · · · · · · · · · · · · · · · · · ·	
78-93-3	4,200				-	
75-15-0	700					
108-90-7	100					
67-66-3	5.7					
95-50-1	600					
106-46-7	75					
156-59-2	70					
100-41-4	30	-	-	·		
1634-04-4	50					
108-88-3	40					
	50 ^(d)					
1330-20-7	20	-				
71-55-6	200					
79-01-6	3					 -
10 y 3 3 3 3 1						en janar
83-32-9	20	Sieter Seine I zusätter und eine Jack des	EA-Indian (Control of Control of	ita kada minagan 2a. 4	lan istila na landa	ale de la constantina
90-12-0	20			*		
91-57-6	20					
91-20-3	20					
						.,
	5,000	and and an imple				er e e
7439-92-1	15	14.5	19.5	27	Alle Control of Succession	4.1
	71-43-2 78-93-3 75-15-0 108-90-7 67-66-3 95-50-1 106-46-7 156-59-2 100-41-4 1634-04-4 108-88-3 1330-20-7 71-55-6 79-01-6 83-32-9 90-12-0 91-57-6 91-20-3	Number Florida GCTL(b) 67-64-1 700 71-43-2 1 78-93-3 4,200 75-15-0 700 108-90-7 100 67-66-3 5.7 95-50-1 600 106-46-7 75 156-59-2 70 100-41-4 30 1634-04-4 50 108-88-3 40 50(d) 1330-20-7 20 71-55-6 200 79-01-6 3 83-32-9 20 90-12-0 20 91-57-6 20 91-20-3 20 5,000	Number Florida GCTL ^(b) RTC BGSV (c)	Number Florida NTC BGSV (c) 8/15/95	Number Florida GCTL(b) BGSV(c) 8/15/95 8/15/95	Number Florida GCTL(b) BGSV (c) 8/15/95 8/15/95 8/15/95 67-64-1 700 71-43-2 1 78-93-3 4,200 75-15-0 700 108-90-7 100 67-66-3 5.7 95-50-1 600 106-46-7 75 156-59-2 70 100-41-4 30 1634-04-4 50 108-88-3 40 108-88-3 40 50(c) 11330-20-7 20 71-55-6 200 79-01-6 3 83-32-9 20 90-12-0 20 91-57-6 20 91-20-3 20

J - Estimated value

Only chemicals detected in at least one sample are shown.

NA - Not analyzed

⁽a) For an organic analyte, the screening criterion is the GCTL; for an inorganic analyte with an established GCTL and BGSV, the screening criterion is the greater of the GCTL or the BGSV.

⁽b) Groundwater Cleanup Target Level (Development of Soil Cleanup Target Levels (SCTLs) for Chapter 62-777, F.A.C., FDEP, May 26, 1999).

⁽c) Background Screening Value (Background Sampling Report for NTC, Orlando, Florida; ABB Environmental Services, August 1995) for inorganics only.

⁽d) Screening value does not apply to samples collected after May 26, 1999.

4.0 DISCUSSION

No "excessively contaminated" soil, as defined in Chapter 62-770.200 F.A.C. has been observed since the removal and incineration of a small quantity of stained soil found near product and vent lines during the removal of USTs 2273-3 and 2273-4 in 1995. Soil contamination is not considered to be a significant problem at the site.

No sinkholes have been observed on the site or on the NTC Main Base. Site soils are considered suitable for urban development.

Early groundwater sampling suggested the presence of contamination at several locations on-site, with the greatest GCTL exceedances occurring in deep wells. Sampling conducted in late 1999 and 2000 confirms that groundwater beneath the partially cemented layer of sand (below 27 to 30 feet bgs) contains the highest concentrations of contaminants.

Observed concentrations of organics in wells immediately downgradient of the former tank pit have decreased significantly since the first monitoring wells were installed in 1996. The presence of benzene at concentrations exceeding its GCTL of 1 μ g/L in well DW-7 is the most significant exceedance observed in the last two sampling rounds. The well lies in the southwest corner of the site (downgradient). No clearly defined contaminant plume exists.

Depth to groundwater in the shallow wells is typically 8 to 10 feet bgs and 2 to 5 feet lower in the deep wells. The lower levels in the deep wells suggest a downward groundwater flow component. Such a flow could also result from surface recharge maintaining higher levels in the shallow wells while the lower part of the aquifer is discharging at some distant point. Insufficient data are available to determine if the utility trenches installed in 1998 significantly influenced the direction of groundwater flow above the partially cemented sand layer.

Public well WW-5 lies approximately 2,250 feet to the north and WW-6 lies approximately 500 feet to the northwest. Private potable water wells lie at 4332 Roush Avenue and 4333 Rixey Street, approximately 0.18 and 0.23 miles southeast of the site, respectively. An irrigation well lies at 4349 Daubert Street, between the two potable water wells described above. Lake Gear, approximately 200 feet southwest of the site, is the nearest surface water body.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Little information is available about the removal of USTs 2273-1 an 2273-2, but the investigations described above found little or no evidence of contamination from those tanks. The Tank Closure Report included in the Contamination Assessment Report states that USTs 2273-3 and 2273-4 were in good condition when removed and have been properly destroyed (ABB-ES, 1997a). A small quantity of contaminated soil found during the removal of USTs 2273-3 and 2273-4 was removed from the site and properly incinerated. The investigations have revealed no evidence of significant soil contamination at the site.

Site soils are composed of sands to a depth of about 30 feet bgs and clayey sands below about 30 feet bgs. The sands between 20 and 27 feet bgs appear to be partially cemented.

Groundwater flows from east-northeast to west-southwest above the partially cemented layer, while groundwater below the layer appears to flow to the southeast. Conditions near the site appear to create a significant downward groundwater flow component.

Scattered detections of organic groundwater contaminants appeared in investigation reports beginning in 1996. Those detections appeared in data for both the shallow and deep wells. Recent sampling has shown little contamination in shallow wells and evidence that deep well contamination is concentrated in the southwest (downgradient) corner of the site. Benzene is the primary contaminant of concern.

No free product has been observed since the sampling of temporary well TW-1 in February 1996.

Recently observed concentrations of benzene in groundwater at well DW-7 preclude consideration of the site for No Further Action under Chapter 62-770 F.A.C. Natural attenuation may be responsible for the significant declines in concentrations of other contaminants observed in early sampling, and benzene is amenable to natural attenuation. The concentrations of benzene observed since the installation of wells DW-7 and DW-9 are only slightly above the GCTL of 1 μ g/L. The most recent concentration observed at well DW-9 is below the GCTL. TtNUS suggests that continued monitoring for a limited period is appropriate.

TtNUS recommends the installation of three additional deep wells. One well would lie crossgradient near the northeast corner of the former building 2273 foundation. A second well would lie at an upgradient location (near MW-6). The last well would lie downgradient of wells DW-7 and DW-9. The presence of buried utilities would require that this well be placed outside the southern NTC boundary.

TtNUS recommends continued quarterly groundwater monitoring at the following locations for a period of one year:

- Downgradient at wells DW-9 and DW-7. These wells lies near the site boundary. A significant increase in benzene concentrations in DW-9 should be grounds for re-examining the monitoring policy.
- Upgradient at wells DW-5 and DW-8. In addition to lying upgradient, well DW-5 was found to contain methylnaphthalene isomers at concentrations at or slightly above the GCTLs in October 1999. Methylnaphthalene concentrations should decline and no benzene exceedances should appear during the monitoring period.
- In the source area at well DW-6.
- Wells should be sampled using the procedures used in the past and analyzed for VOCs using USEPA Method 8260B.

No remaining deep wells lie strongly crossgradient from the assumed source (the tank pit) and the direction of groundwater flow. Evidence of a partially cemented layer of soil between the shallow and deep zones suggests that sampling crossgradient shallow wells would not produce data indicative of deeper conditions.

The site should be reevaluated at the conclusion of the year of monitoring. A change of status to No Further Action will be appropriate if no GCTL exceedances occur in the final two monitoring events and concentrations in the source area meet milestone objectives established in an approved monitoring plan.

Monitoring wells MW-3 and CW-2, which were found during a recent sampling event, should be properly abandoned.

REFERENCES

- ABB-ES (ABB Environmental Services, Inc.), 1995. Background Screening Report for Naval Training Center, Orlando, Florida. August.
- ABB-ES, 1996. Contamination Assessment Report, Main Base, Naval Training Center, Orlando, Florida.

 March.
- ABB-ES, 1997a. Contamination Assessment Report, Building 2273, Main Base, Naval Training Center, Orlando, Florida. March.
- ABB-ES, 1997b. Contamination Assessment Report Addendum, Building 2273, Main Base, Naval Training Center, Orlando, Florida. September 5.
- ABB-ES, 1997c. Project Operations Plan for Site Investigations and Remedial Investigations, Volume I, Naval Training Center, Orlando, Florida. August.
- B&R Environmental (Brown & Root Environmental), 1997. Health and Safety Plan for Completion of Investigative Work and Data Sampling, and addenda. Naval Training Center, Orlando, Florida. May.
- C.C. Johnson & Associates, Inc., 1985. *Initial Assessment Study of Naval Training Center Orlando, Florida*. Prepared for Naval Energy and Environmental Support Activity (NEESA). Port Hueneme, California. August.
- FDEP (Florida Department of Environmental Protection), 1997. Letter from J.W. Mitchell, Remedial Project Manager, FDEP, Tallahassee, Florida, to N. Ugolini, Southern Division, Naval Facilities Engineering Command, North Charleston, South Carolina. April 24.
- FDEP, 1999a. Development of Soil Cleanup Target Levels (SCTLs) for Chapter 62-777, F.A.C. CEHT/TR-99-01. May 26, 1999.
- FDEP, 1999b. Chapter 62-770 *Petroleum Contamination Site Cleanup Criteria*, Florida Administrative Code. August 5.

- HLA (Harding Lawson Associates), 1998a. Base Realignment and Closure, Environmental Site Screening Report, Study Area 30, Naval Training Center, Orlando, Florida. June.
- HLA, 1998b. Letters to the Commanding Officer of SOUTHNAVFACENGCOM regarding replacement of destroyed monitoring wells at Building 2273, NTC Orlando. November 17 and December 9.
- Lichtler, W.F., W. Anderson, and B.F. Joyner, 1968. *Water Resources of Orange County Florida*. U.S. Geological Survey Report of Investigations No. 50, p. 150.
- SOUTHDIV (Southern Division), Naval Facilities Engineering Command, 1997. *Monitoring Well Design, Installation, Construction, and Development Guidelines* (Interim Final), Rev. 0. March 27.
- TtNUS (Tetra Tech NUS, Inc.) 1999. Work Plan for Abandonment and Installation of Monitoring Wells, Building 2273, Main Base. September.
- TtNUS, 2000. Site Investigation Report for Study Area 39, Naval Training Center, Orlando, Florida.

 August.
- USEPA (U.S. Environmental Protection Agency), 1999. *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review.* EPA/540/R-99-008. Office of Solid Waste and Emergency and Remedial Response, Washington, D.C., October.

APPENDIX A SITE ASSESSMENT REPORT SUMMARY SHEET

Site Assessment Summary and Worksheet

This form should be co (Petroleum Cleanup Guida	ompleted by FDEP Site Mance Document #2).	lanagers for all sites.		
Site Name		Pres	pared By	
FACID#		Sita	Manager	
Location		FDI	EP Geologist Reviewer	
Contractor		Date	Assessment Approved	//
Cluster Site?	Other Facility ID#'s:	(1)	(2)	(3)
REPORT SUMMAI	RY:		···	
Date of Report /	Type of Report	Date of Review /	Reviewer(s)	Comments
DISCOVERY AND	SOURCE INFORMA	TION:	Date Last Upo	dated / /
	1st / /	2nd /	/ 3rd /	
Program Type(s):	ATRP E	DI PLRIP		Drogram
Score Reaso	on for Assessment:	٠		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Active Site? Yes	No If yes, date	e of last tightness test:		
If applicable, date w	hen tanks were abandoned	=		
	ted sources of contamination		 ' 	
Leaded Gasoline		/. el/Kerosene	Bunker C Fuel Oil	
Unleaded Gasoline	==		Other:	
Comments:		Oli		
	cluding irrigation, indus	strial and all notable	vialla).	
			Private well(s) within 1/4 mile	= =
	are they downgradient? Yes		Are they down	• — —
Comments:	nan the contamination? Yes	s No Sc	reened deeper than the contam	ination? Yes No No
See potable well survey map				
	L (including soil remov	val during tank closu	res):	
Soil removal	cubic yds	ortons	Date Performed	///
Description:				
Soil remediation op			Landfarm	Other
Free product remov	val	gals	Date Performed: /	/
Description:				
Contaminated water	r removal	gals	Date Performed: / _	/
LITHOLOGIC SUM	MARY:			
Description:				
The impacted aquifer car	n be best characterized by the	e following description:		
Predominantly Sand		Sands & Clays	Predominantly Clays	Limestone
ee Cross-Sections (if available			<u> </u>	

GROUNDWATER ELEVATION DATA:			
Depth to groundwater in upper zone water-table wells (ft):	to	Average (ft)	
Depth to groundwater in lower zone vertical extent wells (ft)		Average (ft)	
Observed maximum range of upper zone fluctuation (ft):		Tidally Influenced? Yes	No 🗍
Suspected Perched Aquifer Condi	tions? Yes No	, [
Comments:			
See graphical and tabular summaries		Date Last Updated/	/
SOIL INVESTIGATIONS:			
Is there vadose zone soil contamination Yes No			
Soil Screening Results			
FID PID Other	Highest	current OVA concentration (ppi	m)
Sample # Depth (ft): [Date Sampled/	/	•
Laboratory Analytical Results (current maximum) Conc. (pp	m) SPLP/TCLP (mg/l) * if applicable *	Sample # Depth (ft)	Date Sampled
Total Volatile Organic Aromatics			/ /
Polynuclear Aromatic Hydrocarbons			_ / /
Total Recoverable Petroleum Hydrocarbons			/ /
Other []			/ /
Other []			/ /
Comments:			
See graphical and tabular summaries		Date Last Updated/	/
GROUNDWATER INVESTIGATIONS:			
Maximum Contaminant Levels (latest sampling data prior			. t: 11 cm
	onc.(ppb) Wel	1# <u>Date Sampled</u>	Applicable CTL
Benzene		//	1
Ethylbenzene		/ /	30
Toluene		//	40
Xylenes		//	
VOA's (BTEX)			<u>n/a</u>
MTBE		/ /	35
EDB		/ /	0.02
TRPH (ppm)	·		5 mg/l
Naphthalene PAH's		//	
		',',	<u>n/a</u>
Lead (total)		 ', ',	15
Other []]		— — <u>/</u> — <u>/</u> —	
			
	here?		
Maximum product thickness (ft) Estimated depth of contamination (ft)	Product recovery ongo		, []
Comments:	Lower aquile	r(s) contaminated? Yes	No
See graphical and tabular summaries		Date Last Updated /	
AQUIFER CHARACTERISTICS:		• —	
See RAP Design Summary and Worksheet	,		
COMMENTS/RECOMMENDATIONS:			
			
			

Date Last Updated ____ /

APPENDIX B SOIL BORING LOGS



PROJECT NAME:
PROJECT NUMBER:
RILLING COMPANY:
DRILLING RIG:

NTC Orla	ndo	
Syn 4757	7457	
W.CDT		

eidrich 0-120

BORING NUMBER: DATE:

_GEOLOGIST:

O.C. 9/B/99-T.C. 922/99 S. Barren / G. Brogenza

DRILLER: Nick Smarrixo

										rice smarrix				
S1-							MA	TERIAL DESCRIPTION			PIC	/FID Re	ading ((ppr
Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows/ 6' or ROD (%)	Sample Rcovery/ Sample Length	Time	Lithology Change (Depth/Ft.) or Screened Level	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	U S C S *	Remarks	Sample	Sampler BZ	Borehole**	
1	Đ		66	854	04.		977	fine- and sand		dry, no				T
t A		/	9	$oxed{\bot}$	don		blk			odor				Ī
	·	/	6		Shorts.									Ī
*	4	4	66	V	slove									Ī
55	4		00	866		lose	groy	bu-grad sand, dry			Ø			Ī
i	<u> </u>		6	1				w/black stringers		<u>-</u> -	1			Ī
,5	<u> </u>		66	100,0							Ø			Ì
i	8		4/								1			ı
5	8		66	old	wind yourd		WH	fine-to med. and		dry no	Ø			İ
3	10				40h			sand, trace phosphatic gors		oder		Ì		ı
5	10		65.5	196		moti.	ale	fine-to med. gand sand, trace phosphalic gars fine-gand. sand		V. moist,	Ø			l
Ł	12			V	ghans [mat.	6			degraded organi	c↓			ĺ
5	12		66	60	Ż.		bloot	,		oder	8			ĺ
;	14		6/2	_	- Mark					oaturated	1			
5	14		66	130	Garid						Ø			
	16		<u>'</u>								1	Ì		•
5	16		66	1034	, עג		DIL	fine - to med - grand Dand		V. moist desd	Ø			-
1	18). \$	V	prong			pand		V. moist, dased. Organic odor	1			•
5	18			1039	gond -						Ø			
_	26		64	•				trace silt			\mathcal{I}			
	20			1042	▼					patinaked	ø			•
	22		22	1							1		1	
5	n	-	00	oyb	cona	\	S.M.V	med - to coass - grand		wet	Ø			•
	24		0/2	↓	soul solded			sand w/ sparse clay-			I			•
۶	24		2375	048		9	1747	zones		parturated	Ø	\neg	_	-

Converted to Well? Yes No Well I.D. #: Dw-6

Page	of	<u>2</u>
------	----	----------



PRO	JECT I) NAME:						BORING NUME	BER:	NW-6				
		NUMBE						DATE:						_
		COMPA	ANY:					GEOLOGIST:						
DKILI	LING F	KIG:						DRILLER:						
							MA	TERIAL DESCRIPTION			PID	/FID Re	ading (r	opm)
Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows/ 6" or ROD (%)	Sample Rcovery/ Sample Length	Time	Lithology Change (Depth/Ft.) or Screened Level	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	U S C S	Remarks	Sample	Sampler BZ	Borehole**	Driller BZ**
55 ¥				1048							1.			\vdash
55	26 26	45	4.5	10 10	<u> </u>					•	₩			\vdash
		7		6/2						-	ø			<u> </u>
	28	<u>/</u> ,	/_	V										
55	78		6 b	104	4.3	hard	tan	sandy clay triable		dry no odor	Ø			
	30		0.5	-	(on 1/2)			sandy clay, friable → set outer rasking ←			1			
					3000 Jago									,
					1380	-								
								<u>"- </u>			\dashv			
		\leftarrow	-								\longrightarrow		\dashv	
		$\langle \cdot \rangle$		-										
		$\langle \ \ \rangle$												
						Ī								
											\neg	\neg	\neg	
													\dashv	
					ļ	-					\dashv	\dashv	\dashv	
					ŀ				┥		\dashv		\dashv	
			\leftarrow		ŀ									
		$\langle \cdot \rangle$	$\langle \cdot \rangle$		}							\dashv	\dashv	
		$\langle \ \ \rangle$	$\langle \ \ \ \rangle$								\dashv	\dashv	\dashv	
								Boring Terminated @ 43.5' BGS						
		$\overline{}$	$/\!\!/$					6 43.5' BGS						
											\neg	\neg	寸	
											十	十	\dashv	_
- +				_	ŀ				\dashv	·	\dashv	\dashv	\dashv	
				⊣	-		-				\dashv	\dashv	\dashv	
When rock														
* Include m						eading frequen		vated response is read.		Drillin Background			P	
Conver	ted to	Well?		Yes	./		No	Well I	#.	DW-6				



Converted to Well?

{ •	t						BORING LOG			raye		- 01	_
PROJEC PROJEC RILLIN PRILLIN	T NUM G COM	BER:		NTC 745 GPI Diedri			BORING I DATE: GEOLOG DRILLER:	NUMBER: O.C., IST:	99-99/9 S. Barton Nick Sm	-7 -ZZ /G:	-ge	aga	<u></u>
No. and (Ft	epth Blows or RC i No. (%)	D Rcove	y/ e h	Change (Depth/Ft.) or Screened Level	Soil Dens Consister or Rool Hardnes	ity/ ncy K	Material Classification	U S C S +	Remarks	_		Borehole**	_
HA 4		200		Agent Agent	Loose	bk	silty fine-gena		dry	NA			
55 18 V 26 95 20 V 22		96 93	0910 91t		donse	848 848	sand laminated med		v.wet, Hsodor Saturated, HS	1 1.1			
When rock corin Include monitor emarks:	g, enter rock reading in 6	brokeness. foot interval	s @ boreh	nole. Increase r	eading frequ	uency if el	evated response is read.			ng Are		0	
						· -							

No



(7						BORING LOG						
		NAME:						BORING NUME	BER:	Dw	-7			
		NUMBE			 			DATE:						_
	LING C	COMPA RIG:	AIN Y :					GEOLOGIST: DRILLER:						
			ī .				MA.	TERIAL DESCRIPTION		T				_
Sample No. and	Depth	Blows/ 6"	Sample	Time	Lithology	Soil Density	<u> </u>	TERIAL DESCRIPTION	ں ا		PI	D/FID Re	ading (opr
Type or RQD	(Ft.) or Run No.	or ROD (%)	Rcovery/ Sample Length		Change (Depth/Ft.) or Screened Level	Consistency or Rock Hardness	Color	Material Classification	S C S	Remarks	Sample	Sampler BZ	Borehole**	
					1		ļ				<u> </u>			
		/	\angle				<u> </u>				<u> </u>			L
٩	28						N ₄ >	·					ļ	L
۶		$\langle \cdot \rangle$	وي و				of the	coarse sand, trave clay v. sandy clay > cower casing set 4 > 30ft 365 4		saturated, HS	Ø	igsqcup		L
/	30		5.25			hard	ton	v. sandy clay		dry, mo oder	Ø			L
		$\langle \cdot \rangle$						-> owler casing set 4						L
								-> 208 + HOS E					· .	_
														_
_								NOTTZ: See DW-8 for 1thologic						_
_								DW-8 for 1 thologic						
_								details 30-43 1+						
\downarrow														
_														
_					}									
\perp								·						
_									_					
_								1/:						
								Boring Terminated						
								Boring Terminated @ 43 H BGS						
												\neg	\neg	
	onitor read	iter rock bro		@ boreh	ole. Increase r	eading frequer	ncy if ele	vated response is read.		Drilli Backgroun	ng Ar d (pp		<u>je</u>	_
nver	ted to	Well?	,	Yes_	V		No_	Well I.D	. #:	DW-7				_



PROJECT NAME:	NTC
PROJECT NUMBER:	
RILLING COMPANY:	G

Orlando - Bldg 2273 7457

BORING NUMBER: ___

DRILLING RIG:

DATE: Diedrich D-120

GEOLOGIST: DRILLER:

						CKL		EO DRILLER.		NICK SAMO	2,40			
Sample	Depth	Blows/ 6'	Samuel .	T:	1:45-1	Call D		TERIAL DESCRIPTION			PIC	/FID Re	ading (ppr
io. and ype or RQD	(Ft.) or Run No	or ROD	' Sample Rcovery/ Sample Length	Time	Lithology Change (Depth/Ft) or Screened Level	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	U S C S *	Remarks	Sample	Sampler BZ	Borehole**	
1	0		9			loose	gra	fine - to med - grad Sand		jiller (?)	Ø			
†A			6				and	Sand			ľ			
		$ \leftarrow $	10 G								ļ			L
r_	4		8											ļ
	_													-
_									_					F
										·				ļ
					 									_
														-
_					[-
\dashv	-				-									_
\dashv					-									_
\dashv	<u>.</u>				-				_				\dashv	-
+					-				_			\dashv	\dashv	_
					f				+			+		-
5	18		3.75	35	-	!	Lay.	med to coarse - grad sund		trace silt, sat-	Ø.		+	_
	20						9/V	flue-to medgend sand		saturated, no ado			1	_
S	20			<u> ډ</u> ډ^		8	% 5	lı		space It grains, saturated, woody	Ø			_
4	22		1.5	V	-		_		\downarrow		1			_
_					-				\perp			_	_	_
+			$\overline{}$	-	-		\dashv		_		_		\dashv	_
nen rock	coring, er	nter rock bro	okeness.				<u> </u>	vated response is read.						_

ad.
3

emarks:				Drilling Area Background (ppm):
Converted to Well?	Yes	No	Well I.D. #:	DW-8



PROJEC				Nī	Corl	ando	<u>-B</u>	BORING	BORING NUM	BER:	DM - B	G	3 8	
PROJEC DRILLIN DRILLIN	G CC	OMP/		0	743 PI Diedr		D-/3		_ DATE: _ GEOLOGIST: _ DRILLER:		9/8-9/ S. B. N: Ch Sma	200	99 07V	?
-					T		MA	TERIAL DESCR	IPTION	T				eading (p
lo. and (Ft		llows/ 6" or ROD (%)	Sample Rcovery/ Sample Length	Time	Lithology Change (Depth/Ft.) or Screened Level	Soil Densit Consistend or Rock Hardness	y/ cy		Classification	U S C S	Remarks	Sample	Sampler BZ	Borehole**
		/									•			
55 Z	-	/	5.5	1/48/4		macy.	15.67 16.45	v. Sandy briable	Clay, SET OUTER		dry, wooder	Ø		
3	0			355			W	0,140/6	CASING)					
√ 31 √ 31	+		6.15			med Soft	tou	sandy	clay		1.25 ° r. blom no occar	Ø		
55 31 55 31			63.55		<i></i>		tan	50%-50%	sand & clay		mo oder	P		
y 38	3		0.5	12 - 12 S			as de	med gr u/opanse	nd pand of clay lense			Ø		\dashv
y 40			45.5	1		-	Grah	· ·	coanse - grace		organic odar	P		
4.	2		5.5					Bame	s above			1		
								Borna -	Terminated BGS					
,								- 0						
nen rock corir clude monito emarks:				@ boreh	nole. Increase	reading frequ	ency if ele	vated response is read.			Drill Backgrour	ing A	_	Ø



PROJE PROJE			=D.	NTO	- Orlan	<u>do - 1</u>	BLdg	2273	BORING	NUMBE	R: _	DW-9				
	NG (COMPA	ANY:	Gro	undwa.	457 er Pa	yech	in Inc.	DATE: GEOLO(GIST:	_	DW-9 4/11-1 5. Ba Nick S	12/	<u>00</u>		_
	140 -	nici.		<u></u> _	reand	LA [)-/2	0	_ DRILLEF	₹:		Nick S	ma	<u>r/\</u>	40	_
Sample	Depth	Blows/ 6"	Sample	Time	Lithology	Soil Density		TERIAL DESCI	RIPTION					D/FID Re		(p
Type or R RQD	(Ft.) or Run No.	or ROD (%)	Rcovery/ Sample Length		Change (Depth/Ft.) or Screened Level	Consistency or Rock Hardness		Material	Classification		U S S S •	Remarks	Sample	Sampler BZ	Borehole**	
THA	0			0830			gray	fine silx	y sand	,	1	· · · · · · · · · · · · · · · · · · ·	Ø			
							and	fine silx med-gra	d. sanc	d	\dashv	LE/1 = (15.17)	,			
1	4											Bill-uxilizy				
											+			-		
	_}				-						-		\dashv			ו
													_	-		
_	-+				-									\dashv		
					ŀ						-		\dashv	\dashv	_	
	-		\triangleleft	_												
	-				F		_				 		\dashv	\dashv		
					-						-		\dashv	+	\dashv	
	-		$\langle \rangle$	\dashv	-											
				\dashv	-		-+				-		\dashv	\dashv	\dashv	
													+	+	\dashv	
	-			-	-		_						\perp			
											-		+	+	+	
en rock conr	ng, ente	r rock brok	eness.												+	
elude monito marks:	or readin	g in 6 foot	intervals @					ed response is read.	by 0	1epxh		Drillinç Background	j Are (ppn	ia า): [/	2	
nverted	to W	/ell?	Y	es			No		———— Wє	ell I.D. #:		DW-9				



DRILI	_ING (NUMBE COMPA	_11.					Hg 2273 BORING NUM DATE: GEOLOGIST:		:DW	<u>-7</u>		
DRIL	-ING F	RIG:						DRILLER:					
Sample	Depth	Blows/ 6"	Sample	Time	Lithology	Soil Density/	MĀ	TERIAL DESCRIPTION		T .	PI	D/FID Re	ading i
No. and Type or RQD	(Ft.) or Run No.	or ROD (%)	Rcovery/ Sample Length		Change (Depth/Ft.) or Screened Level	Consistency or Rock		Material Classification	SCS	Remarks	Sample	Sampler BZ	Borehole**
			/		 								
									<u> </u>		<u> </u>		
,5 J	28		46	0846		mag.	444 848	Sandy clay-dry		Set owler Casing @ 30/t	Ø		
						- V	7.4			CHAING & BOXF			
-									 			_	
					ŀ				-		_	-+	
4												_	
\dashv					-								
+				-+	-							\dashv	
											_	+	
_		\triangleleft	4					SAND (from cuttings)					
+.	10			_	}			· · · · · · · · · · · · · · · · · · ·		54			
+	+3			_+			-+	Boring Terminated @ 43ft B6-5				-	-
								E 73 ft 06-3				+	\dashv
\perp	_	\triangleleft	4										
+		$\overline{}$	$\overline{}$	_	-				\dashv		_		
+					}		-+				+	+	\dashv
					<u> </u>						+	+	\dashv
n rock o ude moi nark:	nitor readii	er rock brok ng in 6 foot	eness. intervals @	borehol	e. Increase re	ading frequenc	y if eleva	ted response is read.		Drillin Background	g Are	 ∋a n): [_/	v



l		ש						BORING LOG						
PRO.	JECT I	NAME: NUMBE COMPA	ER:		NTC 7	0/1a/ 457	nde	BORING NUM DATE: GEOLOGIST:	BER:	MW-8 9/8/94 S. Barto Nick Sma	<u>} </u>			
	LING F		•	_	Diedri	ch D	-/2	DRILLER:	•	Nick Sugar	<u>N</u>			
	1	T .						TERIAL DESCRIPTION	·	TOTAL SING				
Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows/ 6" or ROD (%)	Sample Rcovery/ Sample Length	Time	Lithology Change (Depth/Ft.) or Screened Level	Soil Density/ Consistency or Rock Hardness	T	Material Classification	U S C S	Remarks	Sample	Sampler BZ	Borehole**	Driller BZ**
								NOTE:			1			T
								See DMW-6						
								boring log for						
		\angle						NOTE: See DMW-6 boring log for lithelogic details, No samples collected						
								No samples collected						
								•						
										······································				
					·									
											-			
				\dashv	ŀ		{		_		\vdash	\dashv		
				\exists	}						\vdash		\dashv	
					ļ						\vdash	\dashv	-+	
					ŀ			Boring Territory				-		
								Boring Terminated @ 15 &+ BGS	-			\dashv	-	
								0.000	7			\neg	\dashv	
												一	$\neg \dagger$	
														<u> </u>
_					-		_							
		$\langle \cdot \rangle$	$\langle \cdot \rangle$		 		_		_ -					
		$\overline{}$	$\overline{}$				_		_		\rightarrow	\dashv	\dashv	
When rock	coring, en	ter rock bro	okeness.										\bot	
•mark		ing in 6 foo	t intervals (@ boreho	ole. Increase re	eading frequen	cy if elev	ated response is read		Drilli Backgroun	ng Ard d (ppi		Ø	
Conver	ted to	Well?		Yes_	V		No_	Well I.D	. #: _	MW-8	y			

APPENDIX C WELL COMPLETION LOGS

WELL NO.:	DW-	6
-----------	-----	---

PROJECT PROJECT NO. ELEVATION FIELD GEOLOGIST	LOCATION BORING DATE	BLDG 2273 DW-6 9/22/99	DRILLER METHOD: DRILLING DEVELOPMENT	Nick Smarrite HSA - Mud robug Red) Flo II
GROUND ELEVATION		ELEVATION OF TOP OF SUR ELEVATION OF TOP OF RISE STICK-UP TOP OF SURFACE STICK-UP OF RISER PIPE: I.D. OF SURFACE CASING: TYPE OF SURFACE CASING:	ER PIPE: CASING:	_//8.74 f+ _ ≈ 3f+ Square ss Steel
<u> </u>	3335	TYPE OF SURFACE SEAL:	CONCA	exe
6-in dia. Puc cutar		RISER PIPE I.D.: TYPE OF RISER PIPE:	2 in	
Casing 0-29.5'		BOREHOLE DIAMETER:-OU		
0-29.5		TYPE OF SEAL:	went trong	ut (Type I lered bent)
		ELEVATION / DEPTH OF SEAI	_: 	308t nt. Pellets
		DEPTH - TOP OF SAND PACK	:	366+
		ELEVATION DEPTH- TOP OF	SCREEN:	388+
Borehole		TYPE OF SCREEN:	PVC	
diameter:	S	SLOT SIZE X LENGTH:	0.01 in	x 5 f+
diameter: invercasing bin.	1.	.D. OF SCREEN:	0.01 in 2 in.	
	т	YPE OF SAND PACK:	20/30	
		ELEVATION / DEPTH TO BOTT ELEVATION / DEPTH TO BOTT YPE OF BACKFILL BELOW MO VELL:	OM OF SAND PAC DNITORING	

WELL NO.:,	DW-7
------------	------

PROJECT NTO Orlando PROJECT NO. 7457 ELEVATION //R.38 FIELD GEOLOGIST SBarton/	LOCATION BORING DATE 6. Busanza	BLAG 2273 DW-7 9-9-99/9-22/99	DRILLER PidGmarnto METHOD: DRILLING HSA/MUCI TOTAG DEVELOPMENT RODIFICATION
GROUND ELEVATION		- ELEVATION OF TOP OF SURF - ELEVATION OF TOP OF RISE - STICK-UP TOP OF SURFACE - STICK-UP OF RISER PIPE: - I.D. OF SURFACE CASING: - TYPE OF SURFACE CASING:	R PIPE: //8.38 // CASING: 2 3.35 // 2 3.01+ 4-in: square
<u></u>	3333	- TYPE OF SURFACE SEAL:	concrete
Gindiam. PUC outer		- RISER PIPE I.D.: TYPE OF RISER PIPE: SC.L+	2 in. -40 PVC
Casing 0-30/t	•	BOREHOLE DIAMETER: (/ NA TYPE OF SEAL:	
Borehole diameter-ower Casing 10.25"	•	ELEVATION / CEPTH OF SEAL TYPE OF SEAL:	•
		- DEPTH - TOP OF SAND PACK	<u></u>
		TYPE OF SCREEN:	sett 40 PUC
		SLOT SIZE X LENGTH: I.D. OF SCREEN:	2 in.
		TYPE OF SAND PACK:	Z0/30
		ELEVATION (DEPTH TO BOTT ELEVATION / DEPTH TO BOTT TYPE OF BACKFILL BELOW M WELL: ELEVATION / DEPTH TO BOTT	ON OF SAND PACK: 43/1+ ONITORING Sand

WELL NO.:	DW-8
-----------	------

PROJECT NTC Orlando	LOCATION	BLDG 2273	DRILLER	NICLE
PROJECT NO. 7457	BORING	DW-8	METHOD:	7-7-0-
ELEVATION //9.606+	DATE	9/8-9/99	DRILLING	HSA/muclidan
FIELD GEOLOGIST	_		DEVELOPMENT "	Prod: Flatt
		_	-	Kuarr with
		- ELEVATION OF TOP OF SUR	EACE CACING	
		- ELEVATION OF TOP OF RISE	_	
■ _		- STICK-UP TOP OF SURFACE	_	114.606+
		- STICK-UP OF RISER PIPE:	CASING.	2337 3257
│		- I.D. OF SURFACE CASING:	(/-)	- 2 5 f7
		- TYPE OF SURFACE CASING:	$\frac{9-70.2}{6}$	square
☐ GROUND ELEVATION		THE ST SOME MOLE OF COME.	_Stain/es	3 Syese/
	777 *	TYPE OF SURFACE SEAL:	Conci	ete
	· · · · · · · · · · · · · · · · · · ·			
			_	
6-in diam.		- RISER PIPE I.D.:	2 a	1
Pre outer	1	TYPE OF RISER PIPE:		
Casing		30# 6	to PVC	
		BOREHOLE DIAMETER:	NNES CASAS	6 (4)
0-30/1-80-3		TYPE OF SEAL:	MER Casing	l con ;
Lorehole Mann		[Type I portland on	ment w/200	idead Kent)
Outer casing ->		ELEVATION / DEPTH OF SEA	, -	
10.25 in.		TYPE OF SEAL:		30/t
		THE OF GEAL.	3/8" beny	ON) HE
			· ·	-
		DEPTH - TOP OF SAND PACK	<u> </u>	36 6+
		ELEVATION DEPTH TOP OF	F SCREEN:	38/4
		•		
		TYPE OF SCREEN:	PV	
			_	,
		SLOT SIZE X LENGTH:	0.01 in.	x = 5/t
	ĺ		_	
		I.D. OF SCREEN:	20	<u> </u>
		7/75 05 0445 7464	20/6	
		TYPE OF SAND PACK:	20/3	<u>ses</u>
	-			
	ŀ			
		ELEVATION / DEPTH TO BOTT		436+
	I .	ELEVATION / DEPTH TO BOTT		43/4
	1	TYPE OF BACKFILL BELOW M	ONITORING	· [
		WELL: Sand		
		ELEVATION / DEPTH TO BOTT	OM OF BOREHOLE	43/4

WELL NO.:	DW-9
-----------	------

PROJECT NO. ELEVATION FIELD GEOLOGIST S.Barton ELEVATION OF TOP OF SURFACE CASING: ELEVATION OF TOP OF SURFACE CASING: ELEVATION OF TOP OF SURFACE CASING: STICK-UP TOP OF SURFACE CASING: STICK-UP TOP OF SURFACE CASING: TYPE OF SURFACE CASING: TYPE OF SURFACE CASING: TYPE OF SURFACE CASING: TYPE OF SURFACE SEAL: Concrete RISER PIPE I.D.: TYPE OF RISER PIPE: SCH 40 PVC BOREHOLE DIAMETER: (INNEX CASING) 6 in. TYPE OF SEAL: NEAT 9 COULT	PROJECT NTC (Orlando	LOCATION	B/dg 2273	DRILLER Nick Swamp	
ELEVATION OF TOP OF SURFACE CASING: ELEVATION OF TOP OF RISER PIPE: STICK-UP OF RISER PIPE: 10. OF SURFACE CASING: STICK-UP OF RISER PIPE: 11. OF SURFACE CASING: STAIN JOST SHALL SALL CONC.P. LPC TYPE OF SURFACE SEAL: CONC.P. LPC BOREHOLE DIAMETER: TYPE OF SEAL: TY	PROJECT NO.		BORING		METHOD:	
ELEVATION OF TOP OF SURFACE CASING: ELEVATION OF TOP OF RISER PIPE: STICK-UP OF RISER PIPE: 10. OF SURFACE CASING: STICK-UP OF RISER PIPE: 11. OF SURFACE CASING: STAIN JOST SHALL SALL CONC.P. LPC TYPE OF SURFACE SEAL: CONC.P. LPC BOREHOLE DIAMETER: TYPE OF SEAL: TY			DATE		DRILLING HSA/mucl rotary	
ELEVATION OF TOP OF SURFACE CASING: ELEVATION OF TOP OF RISER PIPE: STICK-UP OF RISER PIPE: SCH YO STICK-UP OF SURFACE CASING: TYPE OF SURFACE CASING: TYPE OF RISER PIPE: SCH YO PVC BOREHOLE DIAMETER: (INNEY CASING) 6 in. TYPE OF SEAL: NEAT SCHOOL CASING: TYPE OF SEAL: NEAT SCHOOL CASING: SCH YO PVC BOREHOLE DIAMETER: (INNEY CASING) 6 in. TYPE OF SEAL: NEAT SCHOOL CASING: SCH YO PVC BOREHOLE DIAMETER: (INNEY CASING) 6 in. TYPE OF SEAL: NEAT SCHOOL CASING: SCH YO PVC SOLOT SIZE X LENGTH: SOLOT S	FIELD GEOLOGIST _	S. Barton	_		DEVELOPMENT PODIFICE TT.	
ELEVATION OF TOP OF RISER PIPE: STICKLYP FOR PSURFACE CASING: 1D. OF SURFACE CASING: TYPE OF SURFACE CASING: STAIN JOST SEE! 1D. OF SURFACE CASING: STAIN JOST SEE! 1D. OF SURFACE CASING: STAIN JOST SEE! TYPE OF SURFACE CASING: STAIN JOST SEE! TYPE OF SURFACE SEAL: CONCRETE TYPE OF RISER PIPE: SCH 40 PVC. SCH 40 PVC. SCH 40 PVC. TYPE OF SEAL: TYPE OF SEAL: TYPE OF SEAL: SCH 40 PVC. SCH 40 PVC. SCH 40 PVC. TYPE OF SEAL: TYPE OF SEAL: TYPE OF SEAL: SCH 40 PVC. SCH 40 PVC					Part Marie Land	
ELEVATION OF TOP OF RISER PIPE: STICKLIP TOP OF SURFACE CASING: 1D. OF SURFACE CASING: TYPE OF SURFACE CASING: TYPE OF SURFACE CASING: Stain Jost Steel TYPE OF SURFACE CASING: Stain Jost Steel TYPE OF SURFACE CASING: Stain Jost Steel TYPE OF SURFACE SEAL: Concrete TYPE OF RISER PIPE: SCH 40 PVC. SCH 40 PVC. SCH 40 PVC. TYPE OF SEAL: TYPE OF SEAL: TYPE OF SEAL: SOST TYPE OF SEAL: TYPE OF SEAL: SOST TYPE OF SEAL: TYPE OF SAND PACK: SLEVATION / DEPTH - TOP OF SCREEN: BORNENLE LEVATION / DEPTH - TOP OF SCREEN: SCH 40 PVC. SLOT SIZE X LENGTH: 1D. OF SCREEN: DEPTH - TOP OF SAND PACK: SLOT SIZE X LENGTH: 1D. OF SCREEN: PVC SLOT SIZE X LENGTH: 1D. OF SCREEN: PVC SLOT SIZE X LENGTH: 1D. OF SCREEN: 4454						
ELEVATION OF TOP OF RISER PIPE: STICKLYP FOR PSURFACE CASING: 1D. OF SURFACE CASING: TYPE OF SURFACE CASING: STAIN JOST SEE! 1D. OF SURFACE CASING: STAIN JOST SEE! 1D. OF SURFACE CASING: STAIN JOST SEE! TYPE OF SURFACE CASING: STAIN JOST SEE! TYPE OF SURFACE SEAL: CONCRETE TYPE OF RISER PIPE: SCH 40 PVC. SCH 40 PVC. SCH 40 PVC. TYPE OF SEAL: TYPE OF SEAL: TYPE OF SEAL: SCH 40 PVC. SCH 40 PVC. SCH 40 PVC. TYPE OF SEAL: TYPE OF SEAL: TYPE OF SEAL: SCH 40 PVC. SCH 40 PVC	_	√		- ELEVATION OF TOP OF SU	REACE CASING	
STICK-UP TOP OF SURFACE CASING: STICK-UP OF RISER PIPE: I.D. OF SURFACE CASING: 17PE OF SURFACE CASING: STAIN JOST STEEL TYPE OF SURFACE CASING: STAIN JOST STEEL TYPE OF RISER PIPE: CASING: SCH 40 PVC. BOREHOLE DIAMETER: (INNEX CASING): TYPE OF SEAL: NEAT SOME PUC SAING: DEPTH - TOP OF SAND PACK: SLOT SIZE X LENGTH: 1.D. OF SCREEN: PVC SLOT SIZE X SCREEN: PVC SLOT SIZE X SCREEN: PVC SLOT SIZE X SCREEN: PVC						
GROUND ELEVATION GROUND ELEVATION GROUND ELEVATION TYPE OF SURFACE CASING: TYPE OF SURFACE SEAL: CONC. e.fe SCH 40 PVC BOREHOLE DIAMETER: (INNEY CASING) 6 in. TYPE OF SEAL: NEAT SCHUT TYPE OF SEAL: 10.25 in. DEPTH-TOP OF SAND PACK ELEVATION / DEPTH-TOP OF SCREEN: 2 in. 32/65 35-37 6† TYPE OF SAND PACK: 24/30 37-43 6† ELEVATION / DEPTH TO BOTTOM OF SCREEN: ELEVATION / DEPTH TO BOTTOM OF SAND PACK TYPE OF SAND PACK: 43/4 ELEVATION / DEPTH TO BOTTOM OF SAND PACK 43/4 ELEVATION / DEPTH TO BOTTOM OF SAND PACK 43/4 ELEVATION / DEPTH TO BOTTOM OF SAND PACK 43/4 ELEVATION / DEPTH TO BOTTOM OF SAND PACK 43/4 ELEVATION / DEPTH TO BOTTOM OF SAND PACK 43/4 ELEVATION / DEPTH TO BOTTOM OF SAND PACK 43/4 ELEVATION / DEPTH TO BOTTOM OF SAND PACK 43/4 ELEVATION / DEPTH TO BOTTOM OF SAND PACK 43/4 ELEVATION / DEPTH TO BOTTOM OF SAND PACK 43/4 ELEVATION / DEPTH TO BOTTOM OF SAND PACK 43/4 ELEVATION / DEPTH TO BOTTOM OF SAND PACK 43/4 ELEVATION / DEPTH TO BOTTOM OF SAND PACK 43/4 ELEVATION / DEPTH TO BOTTOM OF SAND PACK 43/4 ELEVATION / DEPTH TO BOTTOM OF SAND PACK 43/4 ELEVATION / DEPTH TO BOTTOM OF SAND PACK 43/4 ELEVATION / DEPTH TO BOTTOM OF SAND PACK		И <u> </u>			····	
GROUND ELEVATION TOPE OF SURFACE CASING: 4-/N. SQUARCE		I				
TYPE OF SURFACE CASING: Stain 1055 \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$						
GROUND ELEVATION TYPE OF SURFACE SEAL: Concrete RISER PIPE LD: TYPE OF RISER PIPE: SCH 40 PVC BOREHOLE DIAMETER: (INNER CASING) TYPE OF SEAL: TYPE OF						
TYPE OF SURFACE SEAL: CONC. C. LE RISER PIPE LD: TYPE OF RISER PIPE: SCH 40 PVC BOREHOLE DIAMETER: (INNEX CASING) 6 in. TYPE OF SEAL: WEAT COUNT TYPE OF SEAL: WEAT COUNT TYPE OF SEAL: JELEVATION / DEPTH OF SCREEN: TYPE OF SCREEN: TYPE OF SCREEN: DEPTH - TOP OF SCREEN: TYPE OF SCREE	- GROUND ELEVATION	<u> </u>		THE OF GOIN AGE GROWS	5. Stuin 1034 Syee/	
RISER PIPE LD: TYPE OF RISER PIPE: SCH 40 PVC BOREHOLE DIAMETER: (inner casing) 6 in. TYPE OF SEAL: Near 9 count (Type IT Postland Centent w) poundered believe LELEVATION / DEPTH - TOP OF SCREEN: SLOT SIZE X LENGTH: 10.0F SCREEN: PVC SLOT SIZE X LENGTH: 10.0F SCREEN: 2 in. 32/65 35 - 37 6+ TYPE OF SAND PACK: 2 in. 32/65 35 - 37 6+ TYPE OF SAND PACK: 4 1D. OF SCREEN: 2 in. 32/65 35 - 37 6+ TYPE OF SAND PACK: 4 2/30 37 - 43 64 ELEVATION / DEPTH TO BOTTOM OF SCREEN: ELEVATION / DEPTH TO BOTTOM OF SAND PACK: 4 2/34 TYPE OF BACKFILL BELOW MONITORING WELL: SAND						
RISER PIPE LD: TYPE OF RISER PIPE: SCH 40 PVC BOREHOLE DIAMETER: (inner casing) 6 in. TYPE OF SEAL: Neat 9 count TYPE OF SEAL: Neat 9 count TYPE OF SEAL: 306H TYPE OF SEAL: 306H TYPE OF SEAL: 35 ft ELEVATION / DEPTH - TOP OF SCREEN: 38 ft TYPE OF SCREEN: PVC SLOT SIZE X LENGTH: 0.0/ X 5 ft LD. OF SCREEN: 2 in. 32/65 35 - 37 ft TYPE OF SAND PACK: 14/30 37 - 43 ft ELEVATION / DEPTH TO BOTTOM OF SCREEN: 43ft ELEVATION / DEPTH TO BOTTOM OF SAND PACK: 42ft TYPE OF BACKFILL BELOW MONITORING WELL: SAND	<u>▼ </u>		77	-TYPE OF SURFACE SEAL:	concrete	
TYPE OF RISER PIPE: SCH 40 PVC BOREHOLE DIAMETER: (inner casing) 6 in. TYPE OF SEAL: DEPTH - TOP OF SAND PACK: SLOT SIZE X LENGTH: TYPE OF SAND PACK: 20/35 35 - 37 6+ TYPE OF SAND PACK: TYPE OF SAND PACK: 20/30 37 - 4364 ELEVATION / DEPTH TO BOTTOM OF SCREEN: TYPE OF BACKFILL BELOW MONITORING WELL: SAND	1,2,2,2,2,2		<u> </u>			
TYPE OF RISER PIPE: SCH 40 PVC BOREHOLE DIAMETER: (inner casing) 6 in. TYPE OF SEAL: DEPTH - TOP OF SAND PACK: SLOT SIZE X LENGTH: TYPE OF SAND PACK: 20/35 35 - 37 6+ TYPE OF SAND PACK: TYPE OF SAND PACK: 20/30 37 - 4364 ELEVATION / DEPTH TO BOTTOM OF SCREEN: TYPE OF BACKFILL BELOW MONITORING WELL: SAND						
TYPE OF RISER PIPE: SCH 40 PVC BOREHOLE DIAMETER: (inner casing) 6 in. TYPE OF SEAL: DEPTH - TOP OF SAND PACK: SLOT SIZE X LENGTH: TYPE OF SCREEN: TYPE OF SAND PACK: DEPTH - TOP OF SCREEN: TYPE OF SCREEN: TYPE OF SCREEN: DEPTH - TOP OF SCREEN: DEPTH - TOP OF SCREEN: TYPE OF SCREEN: DEPTH - TOP OF SCREEN: D	6-in diam.		-	- RISER PIPE I.D.:	2 in.	
BOREHOLE DIAMETER: (INNER COSING) 6 in. TYPE OF SEAL: Outer Casing - 10.25 in. BOREHOLE DIAMETER: (INNER COSING) 6 in. TYPE OF SEAL: Outer Casing - ELEVATION / DEPTH OF SEAL: TYPE OF SAND PACK: SLOT SIZE X LENGTH: TYPE OF SAND PACK: 30 ft LOOF SCREEN: TYPE OF SAND PACK: 30 ft LOOF SCREEN: TYPE OF SAND PACK: 20 35 - 37 6t TYPE OF SAND PACK: 10.07 SCREEN: 20 37 43 ft ELEVATION / DEPTH TO BOTTOM OF SAND PACK: TYPE OF BACKFILL BELOW MONITORING WELL: SAND BOREHOLE DIAMETER: (INNER COSING) 6 in. Neat 9 count Pur outer			TYPE OF RISER PIPE:			
BOREHOLE DIAMETER: (INNER COSING) 6 in. TYPE OF SEAL: Outer Casing - 10.25 in. BOREHOLE DIAMETER: (INNER COSING) 6 in. TYPE OF SEAL: Outer Casing - ELEVATION / DEPTH OF SEAL: TYPE OF SAND PACK: SLOT SIZE X LENGTH: TYPE OF SAND PACK: 30 ft LOOF SCREEN: TYPE OF SAND PACK: 30 ft LOOF SCREEN: TYPE OF SAND PACK: 20 35 - 37 6t TYPE OF SAND PACK: 10.07 SCREEN: 20 37 43 ft ELEVATION / DEPTH TO BOTTOM OF SAND PACK: TYPE OF BACKFILL BELOW MONITORING WELL: SAND BOREHOLE DIAMETER: (INNER COSING) 6 in. Neat 9 count casing				SCH 40 PVC		
Depth - Top of Sand Pack: Type of Backfill Below Monitoring Well: Sand	1-2011 BGS			2005HOLE BIAMETER	<i>(</i>	
CULTER CASING - (Type I Partland Cement W) poudared Devisor (D.25 in . Content of Seal: 30 ft 179E OF SCREEN: 38 ft 179E OF SCREEN: 38 ft 179E OF SCREEN: 38 ft 179E OF SCREEN: 30 ft 179E OF SCREEN: 30 ft 179E OF SAND PACK: 20 37 - 43 ft 179E OF SAND PACK: 20 37 - 43 ft 179E OF SAND PACK: 20 37 - 43 ft 179E OF BACKFILL BELOW MONITORING WELL: 50 AU A 179E OF BACKFILL BELOW MONITORING WELL: 50 AU A 179E OF BACKFILL BELOW MONITORING WELL: 50 AU A 179E OF BACKFILL BELOW MONITORING WELL: 50 AU A 179E OF BACKFILL BELOW MONITORING WELL: 50 AU A 179E OF BACKFILL BELOW MONITORING WELL: 50 AU A 179E OF BACKFILL BELOW MONITORING WELL: 50 AU A 179E OF BACKFILL BELOW MONITORING WELL: 50 AU A 179E OF BACKFILL BELOW MONITORING						
CULTER CASING - 10.25 in. Content of Seal: 30 1 10 10 10 10 10 10	borehole dan.					
TYPE OF SCREEN: SLOT SIZE X LENGTH: TYPE OF SAND PACK: 30 ft berwink Chips DEPTH - TOP OF SAND PACK: SLOT SIZE X LENGTH: 10.0 F SCREEN: 30 ft TYPE OF SCREEN: 30 ft 30 ft 10				(Type I Hostland C	ement w/ poudered bentonite	
TYPE OF SEAL: 3/8 cin		商物 商物 ◀——		ELEVATION / DEPTH OF SE	AL: 30//	
DEPTH - TOP OF SAND PACK: SLOT SIZE X LENGTH: O.OI X 5 ft I.D. OF SCREEN: 2 in. 39/65 35 - 37 6t TYPE OF SAND PACK: 120/30 37-436t ELEVATION / DEPTH TO BOTTOM OF SCREEN: ELEVATION / DEPTH TO BOTTOM OF SAND PACK: TYPE OF BACKFILL BELOW MONITORING WELL: SAND DEPTH - TOP OF SAND PACK: 35 ft CO I X 5 ft	10.22 41.		1			
ELEVATION / DEPTH - TOP OF SCREEN: 38 / + TYPE OF SCREEN: PVC SLOT SIZE X LENGTH: 6.0/ X 5 / + I.D. OF SCREEN: 2 / in . 30/65 35 - 37 / + TYPE OF SAND PACK: 20/30 37 - 43 / + ELEVATION / DEPTH TO BOTTOM OF SCREEN: 43/ + ELEVATION / DEPTH TO BOTTOM OF SAND PACK: 42/ + TYPE OF BACKFILL BELOW MONITORING WELL: SAND					18 01. Bustallin Coupe	
ELEVATION / DEPTH - TOP OF SCREEN: 38 / + TYPE OF SCREEN: PVC SLOT SIZE X LENGTH: 6.0/ X 5 / + I.D. OF SCREEN: 2 / in . 30/65 35 - 37 / + TYPE OF SAND PACK: 20/30 37 - 43 / + ELEVATION / DEPTH TO BOTTOM OF SCREEN: 43/ + ELEVATION / DEPTH TO BOTTOM OF SAND PACK: 42/ + TYPE OF BACKFILL BELOW MONITORING WELL: SAND					2 - 11	
TYPE OF SCREEN: SLOT SIZE X LENGTH: O.O/ X 5 64 I.D. OF SCREEN: 30/65 35 - 37 64 TYPE OF SAND PACK: 20/30 37-4364 ELEVATION / DEPTH TO BOTTOM OF SCREEN: 4 - ELEVATION / DEPTH TO BOTTOM OF SAND PACK: TYPE OF BACKFILL BELOW MONITORING WELL: SAND				DEPTH - TOP OF SAND PAC	K: 3564	
TYPE OF SCREEN: SLOT SIZE X LENGTH: O.O/ X 5 64 I.D. OF SCREEN: 30/65 35 - 37 64 TYPE OF SAND PACK: 20/30 37-4364 ELEVATION / DEPTH TO BOTTOM OF SCREEN: 4 - ELEVATION / DEPTH TO BOTTOM OF SAND PACK: TYPE OF BACKFILL BELOW MONITORING WELL: SAND		<u> </u>		· ELEVATION / DEPTH - TOP (OF SCREEN: 38 //	
SLOT SIZE X LENGTH: 1.D. OF SCREEN: 30/65 35 - 37 6+ TYPE OF SAND PACK: 2/30 37-4364 ELEVATION / DEPTH TO BOTTOM OF SCREEN: ELEVATION / DEPTH TO BOTTOM OF SAND PACK: 4 TYPE OF BACKFILL BELOW MONITORING WELL: SAND			1			
SLOT SIZE X LENGTH: 1.D. OF SCREEN: 30/65 35 - 37 6+ TYPE OF SAND PACK: 2/30 37-4364 ELEVATION / DEPTH TO BOTTOM OF SCREEN: ELEVATION / DEPTH TO BOTTOM OF SAND PACK: 4 TYPE OF BACKFILL BELOW MONITORING WELL: SAND			J	•		
SLOT SIZE X LENGTH: 1.D. OF SCREEN: 30/65 35 - 37 6+ TYPE OF SAND PACK: 2/30 37-4364 ELEVATION / DEPTH TO BOTTOM OF SCREEN: ELEVATION / DEPTH TO BOTTOM OF SAND PACK: 4 TYPE OF BACKFILL BELOW MONITORING WELL: SAND				TYPE OF SCREEN:	PUC	
ELEVATION / DEPTH TO BOTTOM OF SCREEN: ELEVATION / DEPTH TO BOTTOM OF SAND PACK: TYPE OF BACKFILL BELOW MONITORING WELL: SAND						
ELEVATION / DEPTH TO BOTTOM OF SCREEN: ELEVATION / DEPTH TO BOTTOM OF SAND PACK: TYPE OF BACKFILL BELOW MONITORING WELL: SAND				SLOT SIZE X LENGTH:	0.01 x 5 kx	
TYPE OF SAND PACK: 24/30 37-4364 ELEVATION / DEPTH TO BOTTOM OF SCREEN: 43/4 - ELEVATION / DEPTH TO BOTTOM OF SAND PACK: 43/4 TYPE OF BACKFILL BELOW MONITORING WELL: SAND				-		
TYPE OF SAND PACK: 24/30 37-4364 ELEVATION / DEPTH TO BOTTOM OF SCREEN: 43/4 - ELEVATION / DEPTH TO BOTTOM OF SAND PACK: 43/4 TYPE OF BACKFILL BELOW MONITORING WELL: SAND				I.D. OF SCREEN:	2 in.	
ELEVATION / DEPTH TO BOTTOM OF SCREEN: ELEVATION / DEPTH TO BOTTOM OF SAND PACK: TYPE OF BACKFILL BELOW MONITORING WELL: SAND						
ELEVATION / DEPTH TO BOTTOM OF SCREEN: ELEVATION / DEPTH TO BOTTOM OF SAND PACK: TYPE OF BACKFILL BELOW MONITORING WELL: SAND					30/65 35-376t	
ELEVATION / DEPTH TO BOTTOM OF SCREEN: ELEVATION / DEPTH TO BOTTOM OF SAND PACK: TYPE OF BACKFILL BELOW MONITORING WELL: SAND				TYPE OF SAND PACK:	1N20 37-43/4	
ELEVATION / DEPTH TO BOTTOM OF SAND PACK: TYPE OF BACKFILL BELOW MONITORING WELL: SAND					29 30 21 01	
ELEVATION / DEPTH TO BOTTOM OF SAND PACK: TYPE OF BACKFILL BELOW MONITORING WELL: SAND	l k		-			
ELEVATION / DEPTH TO BOTTOM OF SAND PACK: TYPE OF BACKFILL BELOW MONITORING WELL: SAND						
ELEVATION / DEPTH TO BOTTOM OF SAND PACK: TYPE OF BACKFILL BELOW MONITORING WELL: SAND	ļ					
TYPE OF BACKFILL BELOW MONITORING WELL: SAND	ĺ			ELEVATION / DEPTH TO BOT	TTOM OF SCREEN: 43/4	
WELL: Sand						
				1 · · · · · · · · · · · · · · · · · · ·		
ELEVATION / DEPTH TO BOTTOM OF BOREHOLE: √3 /↓-	ļ					
		•••••••••••••••••••••••••••••••••••••••		ELEVATION / DEPTH TO BOT	TOM OF BOREHOLE: 43/4	

PROJECT NO.	Orlando 7457	LOCATION BORING	BIDG 2273	DRILLER METHOD:	Nick Smarrix
ELEVATION	1/9.37	DATE	9-8-99	DRILLING	HS4
FIELD GEOLOGIST	S. Barlon			DEVELOPMENT	
			- ELEVATION OF TOP OF SURF - ELEVATION OF TOP OF RISE - STICK-UP TOP OF SURFACE - STICK-UP OF RISER PIPE: - I.D. OF SURFACE CASING: - TYPE OF SURFACE CASING:	R PIPE: CASING:	119.37 2 3 bt Square 5 Steel
GROUND ELEVATION			-TYPE OF SURFACE SEAL:	Cencre	
			- RISER PIPE I.D.: TYPE OF RISER PIPE:	2-in Puc	
	-	í	BOREHOLE DIAMETER: TYPE OF SEAL:	8.5 (in. Hand gowt bentonite
			ELEVATION DEPTH OF SEAL TYPE OF SEAL:	30/65 (6)	0.5 ft ive) sand
			DEPTH - TOP OF SAND PACK:		2.5 ft 5ft
		:	TYPE OF SCREEN: SLOT SIZE X LENGTH:	PVC 0.01 x	/o {+
			I.D. OF SCREEN: TYPE OF SAND PACK:	∂0/3 ₀	
			ELEVATION DEPTH TO BOTTO ELEVATION DEPTH TO BOTTO TYPE OF BACKFILL BELOW MO WELL: ELEVATION DEPTH TO BOTTO	OM OF SAND PAC DNITORING Md	- 12.44-

WELL NO.:	MW-C	
-----------	------	--

	ROJECT NTC (LOCATION	BLD6-2273	DRILLER	Nick Sugarito
	ROJECT NO.		37	BORING	$-m\omega-9$	METHOD:	<u> HSA</u>
	EVATION		المالية		9/9-99	DRILLING	
-11	ELD GEOLOGIST _	<u>S.</u>	<u>za</u>	ndow	-	DEVELOPMENT	Peclific TE
H						<u> </u>	
T				_	 		
ł	ζ.	k			ELEVATION OF TOP OF SUR	-	
ļ					- ELEVATION OF TOP OF RISE		118.68 pt
		"	7		- STICK-UP TOP OF SURFACE	CASING:	2 3.25 fF
ĺ					- STICK-UP OF RISER PIPE:		~ 3 ft
ĺ					- I.D. OF SURFACE CASING:		on. squar
!	- GROUND ELEVATION	}			TYPE OF SURFACE CASING:	SCH Y	o puc SB
ΙГ	- GROUND ELEVATION					Stamless	Ske/
*	······································	-		777777₹	- TYPE OF SURFACE SEAL:	_ concre	te
	[,,,,,,,,			****			
					— RISER PIPE I.D.:	<u> </u>	in.
					TYPE OF RISER PIPE:	_	_
						SCH 40 1	PVC
					- BOREHOLE DIAMETER:	8.5	in
					— TYPE OF SEAL:	Neat Gri	m+ (Type I
					Pertland	ement + b	ent powder)
		222			- ELEVATION (DEPTH)OF SEAL		
		888	888		TYPE OF SEAL:	- 4-	7.5-6+
	!		888		THE OF OLIVE.	30/65	Sang
		888	888		DEDTIL TOD OF OAND DAGG		
					- DEPTH - TOP OF SAND PACK		2.5/1
					- ELEVATION / DEPTH)- TOP OF	SCREEN:	5/+
							V
					~.~	50// //	DUC
					- TYPE OF SCREEN:	<u> </u>	PVC
					SLOT SIZE X LENGTH:	0.0(.)	
					SLOT SIZE A LENGTH:	U.01 4	.x 10ft
					I.D. OF SCREEN:	7	
		 				<i>d</i>	· Cn·
i							
V	W/ = GAAMY		-		- TYPE OF SAND PACK:	20,	/ 30
•	WL = approx. 13.0 ft				•		
	/S. 0 / F						
					- ELEVATION (DEPTH TO BOTT	OM OF SOREEN	1
			•		- ELEVATION / DEPTH TO BOTT		- 13 P
			- -		- TYPE OF BACKFILL BELOW M		
					WELL: San		
				-	- ELEVATION / DEPTH TO BOTT		E: /< L+
						J. DONEHOL	

APPENDIX D TETRA TECH NUS FIELD PERSONNEL

TETRA TECH NUS, INC. FIELD PERSONNEL

EMPLOYEE	TITLE
Barton, Enoch S.	Geologist
Braganza, Gary A.	Geologist
Margetts, Kevin J.	Field Technician
Morrison, Cher D.	Environmental Specialist
Wellman, Jennifer C.	Geologist

APPENDIX E GRAIN SIZE ANALYSES



Project No.: Report No. Date:

19924-001-02 83833

October 18, 1999

Consultants In: Geotechnical Engineering • Environmental Sciences • Construction Materials Testing • Threshold Inspections

3532 Maggie Blvd. • Orlando, FL 32811 • (407) 423-0504 • FAX (407) 423-3106

REPORT ON SIEVE ANALYSIS

Client:

Tetra Tech NUS, Inc.

Attn: Mr. Michael Campbell

800 Oak Ridge Turnpike, Suite A-600 Oak Ridge, Tennessee 37830

Project:

Naval Training Center, Building No. 2273, City of Orlando, Florida - P.O. No. 99532

Date Tested:

10-7-99

Tested By:

L. Bass

Date Sampled: 10-1-99

Sample No.:

DW-6-0002

Technician:

Client

TEST RESULTS

Sieve No.	Percent Passing
3/4 Inch	100.0
No. 4	100.0
No. 10	99.5
No. 40	94.7
No. 60	71.2
No. 100	19.7
No. 200	6.3

	
Moisture Content (%)	9.4

cc: Client (2)

'ra Tech NUS, Inc. (1)

Reviewed/By Universal Engineering Sciences, Inc.

Fred J Schmalzer, P.F.

Department Manager/ Construction Services

STATE OF FLORIDA

Registered Professional Engineers No. 38818



Project No.: Report No.

Date:

19924-001-02 83835

October 18, 1999

Consultants In: Geotechnical Engineering • Environmental Sciences • Construction Materials Testing • Threshold Inspections

3532 Maggie Blvd. • Orlando, FL 32811 • (407) 423-0504 • FAX (407) 423-3106

REPORT ON SIEVE ANALYSIS

Client:

Tetra Tech NUS, Inc.

Attn: Mr. Michael Campbell

800 Oak Ridge Turnpike, Suite A-600

Oak Ridge, Tennessee 37830

Project:

Naval Training Center, Building No. 2273, City of Orlando, Florida - P.O. No. 99532

Date Tested:

10-7-99

Tested By:

L. Bass

Date Sampled: 10-1-99

Sample No.:

DW-6-0810

Technician:

Client

TEST RESULTS

Sieve No.	Percent Passing
3/4 Inch	100.0
No. 4	99.8
No. 10	99.5
No. 40	94.2
No. 60	66.3
No. 100	12.8
No. 200	11.1

Moisture Content	8.4
(%)	

cc: Client (2)

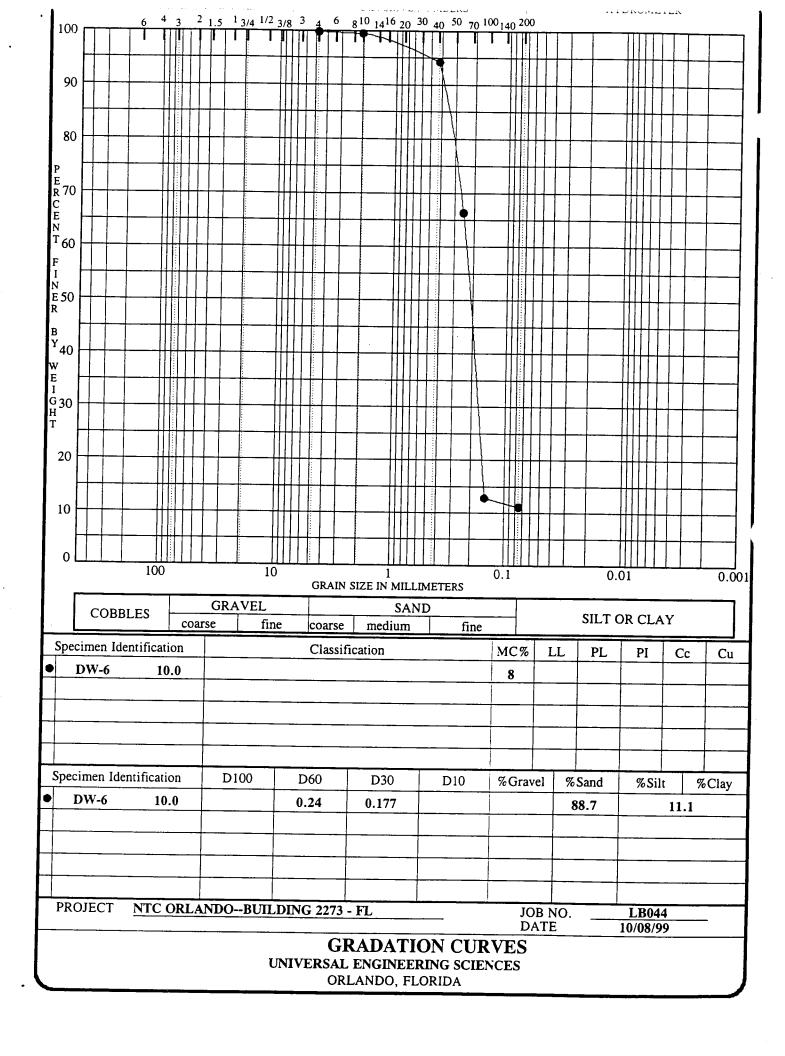
tra Tech NUS, Inc. (1)

Reviewed By Universal Engineering Sciences, Inc.

Fred J. Schmalzer, P.E.

Department Manager - Construction Services
STATE OF FLORIDA

Registered Professional Engineers No. 38818





Project No.: Report No.

Date:

19924-001-02 83838

. . . .

October 18, 1999

Consultants In: Geotechnical Engineering • Environmental Sciences • Construction Materials Testing • Threshold Inspections

3532 Maggie Blvd. • Orlando, FL 32811 • (407) 423-0504 • FAX (407) 423-3106

REPORT ON SIEVE ANALYSIS

Client:

Tetra Tech NUS, Inc.

Attn: Mr. Michael Campbell

800 Oak Ridge Turnpike, Suite A-600 Oak Ridge, Tennessee 37830

Project:

Naval Training Center, Building No. 2273, City of Orlando, Florida - P.O. No. 99532

Date Tested:

10-7-99

Tested By:

L. Bass

Date Sampled: 10-1-99

Sample No.:

DW-6-1012

Technician:

Client

TEST RESULTS

Sieve No.	Percent Passing
3/4 Inch	100.0
No. 4	100.0
No. 10	100.0
No. 40	97.5
· No. 60	76.2
No. 100	13.7
No. 200	4.5

Moisture Content	21.2
(%)	

cc: Client (2)

etra Tech NUS, Inc. (1)

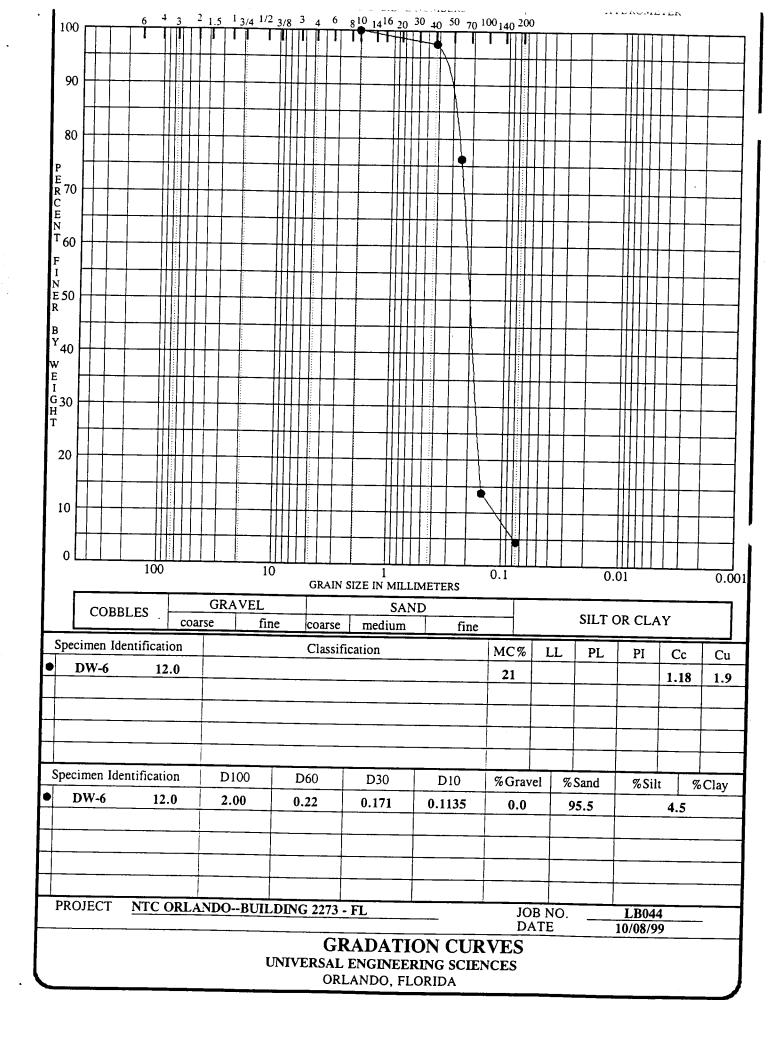
Reviewed By.// Universal Engineering Sciences, Inc.

Fred J. Schmalzer, P.E.

Department Manager - Construction Services

STATE OF FLORIDA

Registered Professional Engineers No. 38818





Project No.: Report No.

19924-001-02 83839

Date:

October 18, 1999

Consultants In: Geotechnical Engineering • Environmental Sciences • Construction Materials Testing • Threshold Inspections

3532 Maggie Blvd. • Orlando, FL 32811 • (407) 423-0504 • FAX (407) 423-3106

REPORT ON SIEVE ANALYSIS

Client:

Tetra Tech NUS, Inc.

Attn: Mr. Michael Campbell

800 Oak Ridge Turnpike, Suite A-600

Oak Ridge, Tennessee 37830

Project:

Naval Training Center, Building No. 2273, City of Orlando, Florida - P.O. No. 99532

Date Tested:

10-7-99

Tested By:

L. Bass

Date Sampled: 10-1-99

Sample No.:

DW-6-1820

Technician:

Client

TEST RESULTS

Sieve No.	Percent Passing
3/4 Inch	100.0
No. 4	100.0
No. 10	100.0
No. 40	96.2
No. 60	63.4
No. 100	14.1
No. 200	5.3

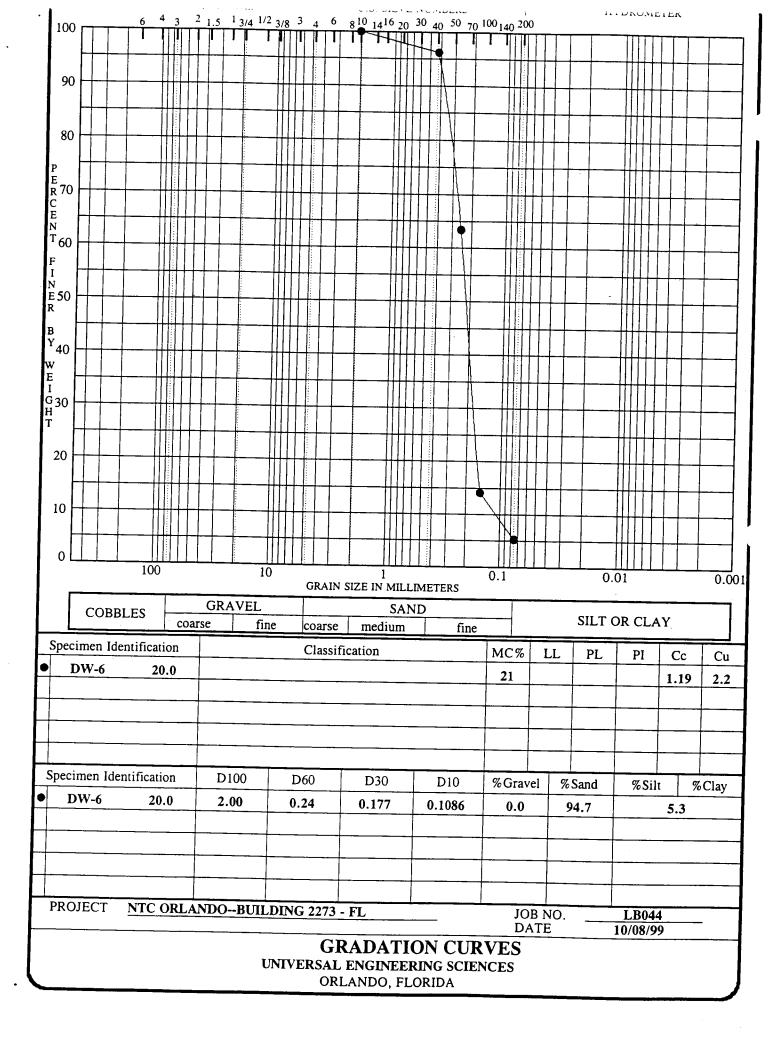
Moisture Content	21.4
(%)	1

cc: Client (2) etra Tech NUS, inc. (1) Reviewed By Universal #ngirleering Sciences, Inc.

Fred J. Schmalzer, P.E. Department Manager - Construction Services

STATE OF FLORIDA

Registered Professional Engineers No. 38818





UNIVERSAL

ENGINEERING SCIENCES

Project No.: Report No. Date: 19924-001-02

83841

October 18, 1999

Consultants In: Geotechnical Engineering • Environmental Sciences • Construction Materials Testing • Threshold Inspections

3532 Maggie Blvd. • Orlando, FL 32811 • (407) 423-0504 • FAX (407) 423-3106

REPORT ON SIEVE ANALYSIS

Client:

Tetra Tech NUS, Inc.

Attn: Mr. Michael Campbell

800 Oak Ridge Turnpike, Suite A-600 Oak Ridge, Tennessee 37830

Project:

Naval Training Center, Building No. 2273, City of Orlando, Florida - P.O. No. 99532

Date Tested:

10-7-99

Tested By:

L. Bass

Date Sampled: 10-1-99

Sample No.:

DW-6-2224

Technician:

Client

TEST RESULTS

Sieve No.	Percent Passing
3/4 Inch	100.0
No. 4	100.0
No. 10	100.0
No. 40	92.3
No. 60	48.6
No. 100	10.9
No. 200	4.8

Moisture Content	10.0
(%)	19.8

cc: Client (2)

Tetra Tech NUS, Inc. (1)

Reviewed By,

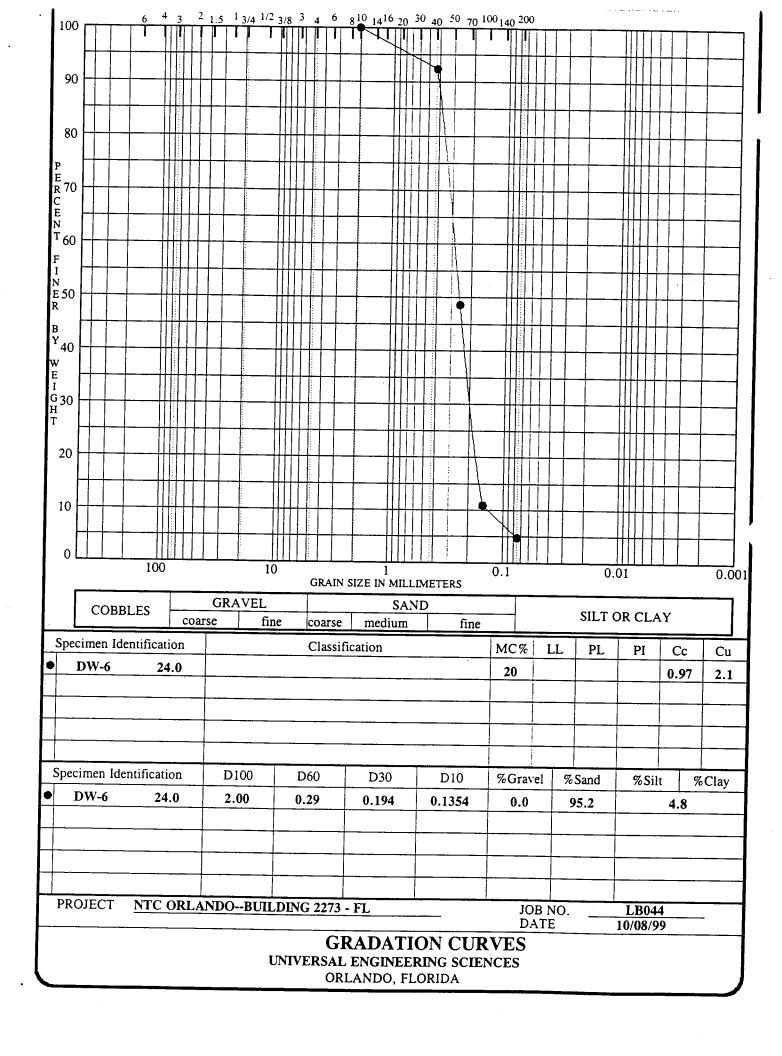
Universal Engineering Sciences, Inc.

Fred J. Schmalzer P.E.

Department Mariager Construction Services

STATE OF FLORIDA

Registered Professional Engineers No. 38818





Project No.: Report No. Date:

19924-001-02 83843

October 18, 1999

Consultants In: Geotechnical Engineering • Environmental Sciences • Construction Materials Testing • Threshold Inspections

3532 Maggie Blvd. • Orlando, FL 32811 • (407) 423-0504 • FAX (407) 423-3106

REPORT ON SIEVE ANALYSIS

Client:

Tetra Tech NUS, Inc.

Attn: Mr. Michael Campbell

800 Oak Ridge Turnpike, Suite A-600 Oak Ridge, Tennessee 37830

Project:

Naval Training Center, Building No. 2273, City of Orlando, Florida - P.O. No. 99532

Date Tested:

10-7-99

Tested By:

L. Bass

Date Sampled: 10-1-99

Sample No.:

DW-6-2628

Technician:

Client

TEST RESULTS

TEST NEGOTIO	
Sieve No.	Percent Passing
3/4 Inch	100.0
No. 4	100.0
No. 10	100.0
No. 40	95.9
No. 60	75.3
No. 100	30.5
No. 200	12.5

	·
Moisture Content	19.2
(%)	,,

cc: Client (2)

etra Tech NUS, Inc. (1)

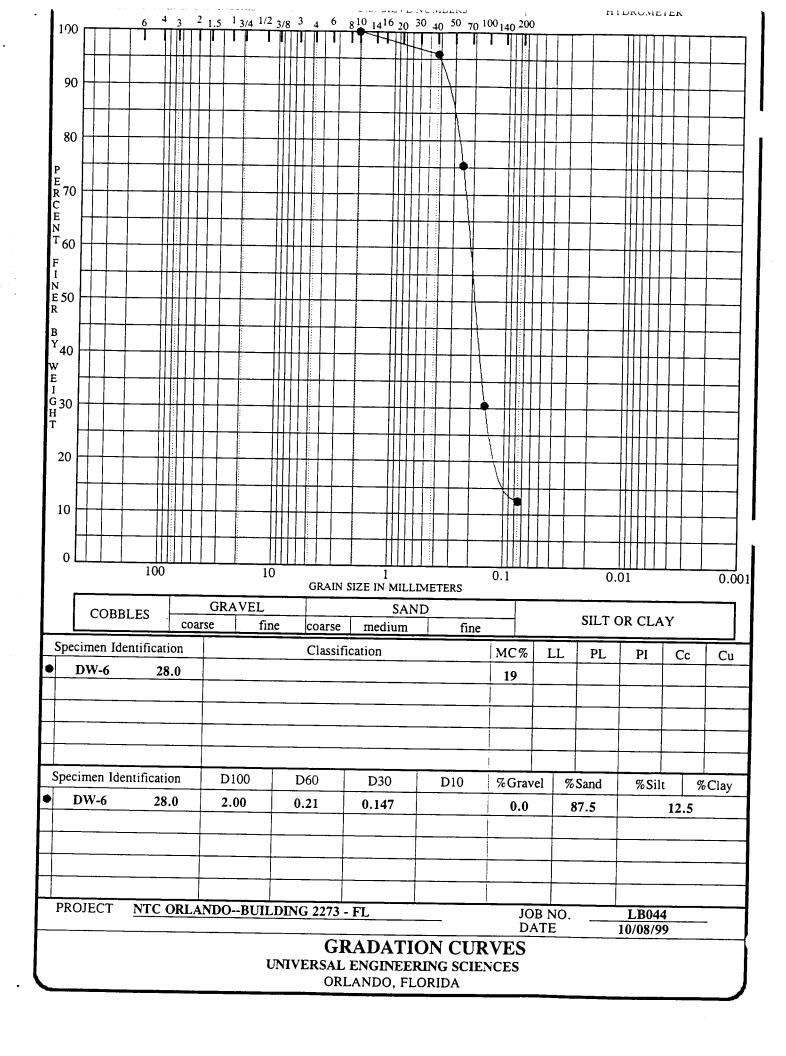
Reviewed By, Universal Engineering Sciences, Inc.

Fred J. Schmalzer, P.E.

Department Manager - Construction Services

STATE OF FLORIDA

Registered Professional Engineers No. 38818





Project No.: Report No.

19924-001-02 83845

Date:

October 18, 1999

Consultants In: Geotechnical Engineering • Environmental Sciences • Construction Materials Testing • Threshold Inspections

3532 Maggie Blvd. • Orlando, FL 32811 • (407) 423-0504 • FAX (407) 423-3106

REPORT ON SIEVE ANALYSIS

Client:

Tetra Tech NUS, Inc.

Attn: Mr. Michael Campbell

800 Oak Ridge Turnpike, Suite A-600

Oak Ridge, Tennessee 37830

Project:

Naval Training Center, Building No. 2273, City of Orlando, Florida - P.O. No. 99532

Date Tested:

10-7-99

Tested By:

L. Bass

Date Sampled: 10-1-99

Sample No.:

DW-6-2830

Technician:

Client

TEST RESULTS

Sieve No.	Percent Passing
3/4 Inch	100.0
No. 4	100.0
No. 10	100.0
No. 40	96.8
No. 60	88.5
No. 100	66.0
No. 200	44.1

Moisture Content (%)	23.0
-------------------------	------

cc: Client (2)

etra Tech NUS, Inc. (1)

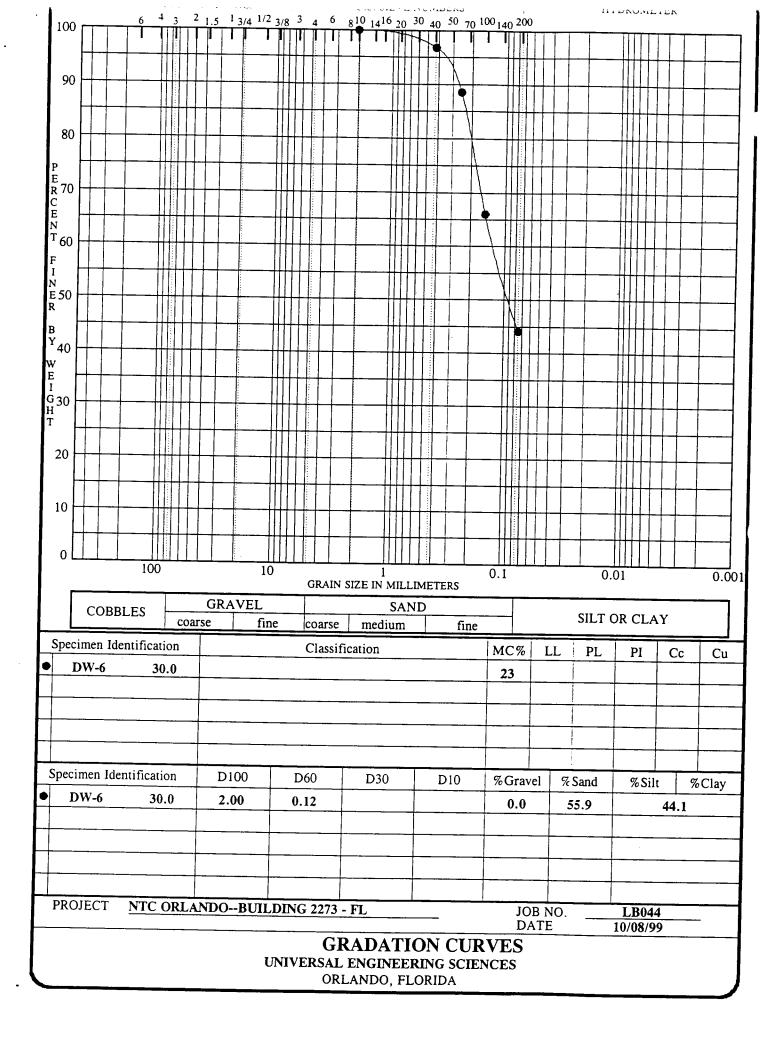
Reviewed By.

Universal Engineering Sciences, Inc.

Fred J. Schmalzer, P.E. Department Manager - Construction Services

STATE OF FLORIDA

Registered Professional Engineers No. 38818





Project No.: Report No. Date:

19924-001-02 83846

October 18, 1999

Consultants In: Geotechnical Engineering • Environmental Sciences • Construction Materials Testing • Threshold Inspections

3532 Maggie Blvd. • Orlando, FL 32811 • (407) 423-0504 • FAX (407) 423-3106

REPORT ON SIEVE ANALYSIS

Client:

Tetra Tech NUS, Inc.

Attn: Mr. Michael Campbell

800 Oak Ridge Turnpike, Suite A-600

Oak Ridge, Tennessee 37830

Project:

Naval Training Center, Building No. 2273, City of Orlando, Florida - P.O. No. 99532

Date Tested:

10-7-99

Tested By:

L. Bass

Date Sampled: 10-1-99

Sample No.:

DW-8-3840

Technician:

Client

TEST RESULTS

123.11200210								
Sieve No.	Percent Passing							
3/4 Inch	100.0							
No. 4	100.0							
No. 10	100.0							
No. 40	99.6							
No. 60	96.4							
No. 100	58.0							
No. 200	11.6							

Moisture Content	30.7
(%)	

cc: Client (2)

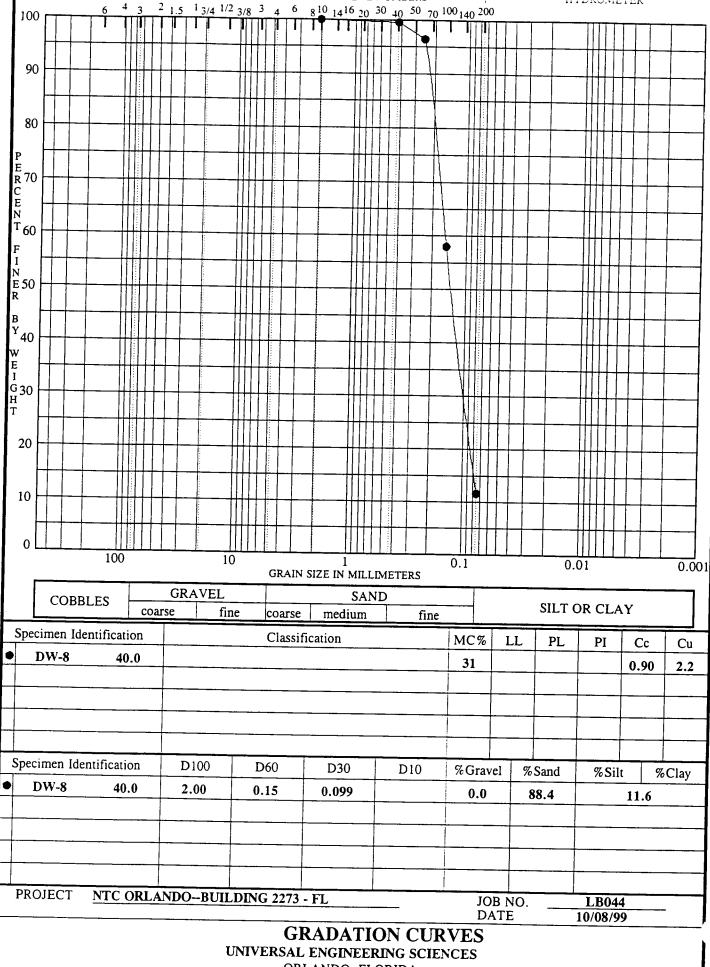
Tetra Tech NUS, Inc. (1)

Reviewed By, Universal Engineering Sciences, Inc.

Fred J. Schmalzer, P.E.

Department Manager - Construction Services STATE OF FLORIDA

Registered Professional Engineers No. 38818



THE DAY. STEELER

ORLANDO, FLORIDA



Project No.: Report No.

19924-001-02 83847

October 18, 1999

Date: Consultants In: Geotechnical Engineering • Environmental Sciences • Construction Materials Testing • Threshold Inspections

3532 Maggie Blvd. • Orlando, FL 32811 • (407) 423-0504 • FAX (407) 423-3106

REPORT ON SIEVE ANALYSIS

Client:

Tetra Tech NUS, Inc.

Attn: Mr. Michael Campbell

800 Oak Ridge Turnpike, Suite A-600 Oak Ridge, Tennessee 37830

Project:

Naval Training Center, Building No. 2273, City of Orlando, Florida - P.O. No. 99532

Date Tested:

10-7-99

Tested By:

L. Bass

Date Sampled: 10-1-99

Sample No.:

DW-8-4042

Technician:

Client

TEST RESULTS

Sieve No.	Percent Passing
3/4 Inch	100.0
No. 4	97.8
No. 10	97.7
No. 40	94.2
No. 60	77.4
No. 100	31.9
No. 200	8.5

Moisture Content (%)	14.0	

cc: Client (2)

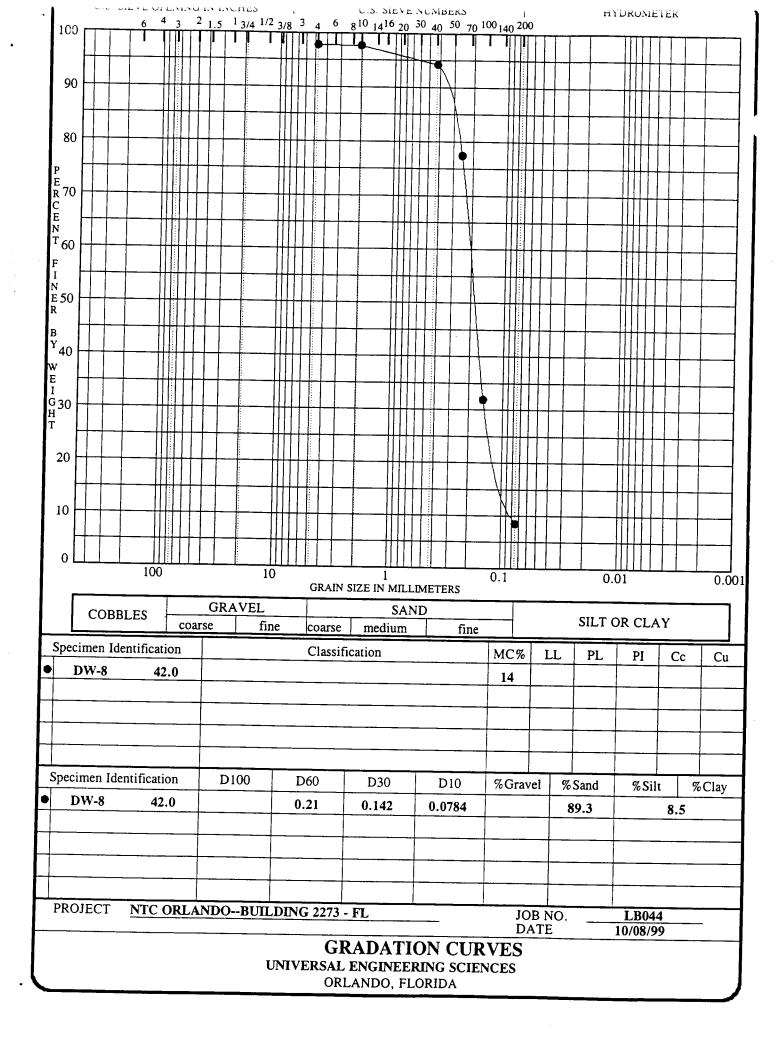
Tetra Tech NUS, Inc. (1)

Reviewed By Universal Engineering Sciences, Inc.

Fred L Schmalzer, P.E.

Department Manager Construction Services
STATE OF FLORIDA

Registered Professional Engineers No. 38818



Project:	NIC OKLANDOBUILDIN	NG 2273		Job Nun	nber:	LB044	Sheet	1	of	1
Manager	CLIENT	Client:	TETRA TECH NUS		Projec	t Description:				
Location:	FL									
			<u>.1</u>							
Elevation D	Patum:									

NTC ORLANDO--BUILDING 2273

Project:

Boring Depth	Specimen Description	Water Content	Organic Content	ASTM Class	K ft/day	Sieve Analysis				
Elev.	LL PL PI No 200				10/day	No 4	No 10	No 40	No 60	No 100
DW-6 2.0 DW-6	6.3	9.4				100.0	99.5	94.7	71.2	19.7
10.0 DW-6		8.4				99.8	99.5	94.2	66.3	12.8
12.0 DW-6	4.5	21.2				100.0	100.0	97.5	76.2	13.7
20.0 DW-6	5.3	21.4			· .	100.0	100.0	96.2	63.4	14.1
DW-6	4.8	19.8				100.0	100.0	92.3	48.6	10.9
28.0 DW-6	12:5	19.2				100.0	100.0	95.9	75.3	30.5
30.0 DW-8	44.1	23.0				100.0	100.0	96.8	88.5	66.0
40.0 DW-8	11.6	30.7				100.0	100.0	99.6	96.4	58.0
42.0	8.5	14.0				97.8	97.7	94.2	77.4	31.9

Summary of **Material Properties** UNIVERSAL ENGINEERING SCIENCES, INC. ORLANDO, FLORIDA



APPENDIX F GROUNDWATER SAMPLING LOGS

Project Site		NTC Orlan		_		Sampl	e ID No.:	# t = 0 =	126.N.			
Project No.: CTO 002				_			Location:	BIDE	1360W	0510		
I I Dome	otio IA/all Data					Sample		BLDG-2273				
	stic Well Data pring Well Data					C.O.C.	No.:		58190	2 2.1		
	Well Type:								<u> </u>	-		
	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,											
						•						
				PU	RGING DATA							
Casing	Gals/Ft	Time	pН	s.c.	Temp.	Turbidity	DO	ORP	DTW			
Size (in.)	of Water	Hr:Min	pH units	mS/cm	్లి	NTU	mg/L	mV	ft BTOC	Flow Rat		
1	0.041	1245	4.83	124	28.95	72.4	2.29	78.3	 			
(2)	0.163	1350	4.61	104	29.04				10.61	100		
3	0.367	/355	4.52	94	29.21			73.7	10.61	90		
4	0.653	1400	4.46	93	28.73	54.5	1.36	69.5	10.64	90		
5	1.020	1405	4.43	92			1.29	61.2	10.62	80		
6	1.469	1410		92	28.55	71.3	1.29	53.3	10.62	35		
8	2.611		4.42		28.48	0	1.30	45.3	10.59			
10	4.080	1415	4.42	91	18.5/	Ø	1.35	37.6	10.59	90		
		1420	4.42		28.73	7	1.38	34.1	10,59	90		
		1425	4.43	91	28.95	Ø	1.40	31.3	10.57	90		
		1430	4.43	90	28.98	0	1.44	26.6	10.59	90		
		1435	4.43	90	29.22	1000	1.47	25.0	10.59	90		
Mall Casia a Di		1440	4.43	90	28.95	"ø	1.49	22.1	10.54	90		
Well Casing Dia		1445	4,43	91	28.81	Ø	1.52	18.8	10.59	90		
Total Well Dept		1450	4.42	90	28.36	Ø	1.53	14.1	10.59	90		
Static Water Le		1455	4.42	90	28.38	6	1.54	13.9				
One Casing Vo	lume(ga)L): 3,57	1500	4.42	90	28.58	05	1.56	14.1	10.59	90		
O'ocreen	: 1.63 cal.				20.00		7.56	/ F. /	16,59	20		
[3.78galsA_] L	laals											
					 							
Start Purge (hrs	1340											
End Purge (hrs)					 							
otal Purge Time					 							
otal Vol. Purge	d (gal Ø 1,435											
	7,130											
			+									
	I											
	T T	Color	рН	SAMPLE S.C.	PARAMETER							
ate: /0/0	12/99	Description	pH units	mS/cm	Temp. °C	Turbidity NTU	DO	ORP	DTW	Flow Rate		
ime: /5	16	It yellow	4.42	90			mg/L	mV .	ft BTOC	ml/min		
		7 7 9 7 10			28.57 CTION INFOR	Ø	1.55	14.0	10.59	20		
<u> </u>	Analysis		Preserv		SHOW HITE		ner Requirem					
						CONGI	requiren	ients		Collected		
	Beta/Total Uranium/R	adium 226	INO3 (pH < 2)		1 - 1 gai plastic	oubitainer						
PAH			NONE		14 0/05	s Camb	00			10		
VOC	 		HCL		40 mic	0/258		<u>(</u>				
						0	VOA_			6		
				EDETIONAL	Stational and disconni	******************************	***************************************					
		<u> </u>			INFORMATION Method:	- 24						
A Reading (ppn	^{n):} Ø				Peristaltic F		7	ubing Type:				
				1] Centrifugal] Bladder Pu] Polyethylen	ıe			
				[]	Tube Evaci		[r\] Teflon ✓ Teflon-lined	i Polyethylene			
				<i>"</i>	🗘 Vacuum Ju	g Assembly	9	4 renormined	roiyethylene			
rcle if Applicat	ile:			1] Bailer	ignature(s):						
MS/MSD D	ouplicate ID No.:		. 11.	r.lock		·9·10(0/6(5).		a .		I		
	N2273	128%.	a care	yed 15x	5		Slund	Barta	1	ł		
	~0 13	(CE)		1370				J	·			
		9	_				,					

											_	
Project Site I	Name: <u>NTC Orlando</u> 7457/						Sample L	.ocation:_ <i>₺</i>	2273			
[] Dome	stic Well Data		Flow-Thru (Sample ID No.: N 22736 DW0513						
Make\Model: HORIBA U-2 [X] Monitoring Well Data					<u>-22</u>							
[] Other	Well Type:		Serial Nos.:			-	C-O-C No				1	
Ujoner	vveir rype			PUR	GING DATA		C-C-C NC	<u> </u>				
Casing	Gals Liters	Time	рН	s.c.	Temp.	Turbidity	ро	ORP	DTW	Flow Rate		
Size (in.)	per ft. of Water	Hr:Min	pH units	mS/cm	°C	NTU	mg/L	mV	ft BTOC	ml/min	┨ .	
0.5	0.01 0.038	1325	9.40	.094	253	2.7	605	-26	1231	80 ML		
1	0.041 0.155	1330	4.64	086	25.1	2.5	1145	-28	12.31	RU ML		
2	0.163 0.617	1335	464	150	25.0	2.2	11 10 55		12.31	RO in L	7	
4	0.653 2.47	1340	464	0.23	251	2.3	9.03	-30	12.31	ROML	7	
6	1.469 5.56	1345	4.60	-033	250	2.5	746	-30	12.31	80mL	1	
8	2.611 9.88	1350	4.60	093	25.1	2.5	615	-30	12.31	POME	7	
10	4.08 15.44	1355	460	.083	25.0	23	559	-32)	12.31	ROML	7	
	[1 gal. = 3.785 L]	1400	4.60	024	250	Z. 1	501	-31	12.31	ZonL	7	
		H05	461	083	25.1	2.2	4.70	-31	12.31	ROML	7	
PID Reading (p	ppm): . <i>&</i>	1410	4.60	1294	250	2.2	4.30	-32	12.31	70 ML	7	
		1413	4 59	083	250	2-1	4.29	-33	12.31	AU ML	7	
		1416	460	.084	25./	2.3	4.26	-34/	12.31	ROML	٦	
Well Casing D	Diameter: 2 "										7	
Total Well De	pth: 32.0										7	
Static Water L	_evel: [7.3]										7	
Tube Intake D	Depth: 10 . 0										1	
											7	
Start Purge (h	in: 1323										1	
End Purge (hi	1: 1420										1	
	ime (min): 57										1	
Total Vol. Pur	ged: 4560 mL										1	
											1	
											1	
											1	
											1	
				RQUALITY			5					
D-4 / 2-	~	Color	pH	S.C.	Temp. °C	Turbidity	DO	ORP	DTW	Flow Rate		
Date: // 30	70	Description	pH units	mS/cm		NTU	mg/L	mV - 3 4	ft BTOC	ml/min	-	
1111e. /7	<i>20</i>	410 /Clear	7.00		25 i Sinforma	2 · 5	4.24	<u> </u>	j2.31	DML	1	
***************************************	Analysis		Prese	rvative		200000000000000000000000000000000000000	iner Requirer	nents		Collected	1.	
CL VOCs		8260B		HCI		(3)		glass vials		1/3000-	> G	
SVOCs/PAHs		8270C/8310		None		3(2)	1-liter	amber glass		1/3000 -	عا 4	
Pesticides		8081A		None				amber glass]	
Herbicides K-tra Organic		8151 8XXX		None		1 2		amber glass				
AL Metals		6000/7000		None HNO ₃	<u> </u>	1 or 2		amber glass HDPE		· · · · · · · · · · · · · · · · · · ·	1	
RPH		FL PRO		H ₂ SO ₄		1		amber glass			1	
				ADDITIONA	LINFORMA	TION					1	
Comments:				***** *		al Pump Pump		Tubing Type Polyethyl Teflon Teflon-lin		ne Toil	\\\	
	C	AIQC SAM	PLES		[] Bailer	Signature(s)	: /			_	ł	
MS/MSD:		Duplicate II				. /	1 101	? "	1			
		1/227	2 h 10	0013		Klain	1 1/1	unt 4				
		1041	2010	20/3	i	14100	1 / 10	unje 7			i	

Page 1 of 1

Project Site Name: NTC Orla Project No.: CTO 002:							E ID No.: Location:	DW- 227	3 311	
[X] Mon	nestic Well Data itoring Well Data er Well Type:					C.O.C.			<u> </u>	-
				Drie	GING DATA	***************************************	200000000000000000000000000000000000000		XXXXXX	
Casing	Gals/Ft	Time	рН	s.c.	Temp.	Turbidity	T	T	T	
Size (in.)	of Water	Hr:Min	pH units	mS/cm	°C	NTU	mg/L	ORP mV	DTW	Flow Rat
1	0.041	1579	28.98	438	29, 12	10.97	 		ft BTOC	ml/min
2	0.163	Heo		1530	Becow		1.6	961	1680	100
3	0.367	1613	7.42	5980	30 74	46. D	3.24			
4	0.653	1620	9 05	4710	30.02			623	16.43	100
5	1.020	1625	9 53	432-0	1	9.80	1.70	-9.7	16 43	100
6	1.469	1630	467	426.0	30.05		117	-27 1	16 43	100
8	2.611	255	971		30 20	10.3	0 9 0	-30.1	16.97	100
10	4.080	16.40	971	426 0	29.97	10.1	0.75	- 32.3	1740	100
		,		425.0	2966	10.3	0.68	-342	1740	100
		1645		4250	29 70	10 1	2-64	-35.3	17.40	10to
		11.50	47.7	425 C	29.76	11.2	0.6-1	-35.9	17.40	120
		1055	9.34	4240	79.90	11.7	0.57	- 7 7.2	17 40	1E'C
Well Casing	Diameter: 2 シャン	1700	991	424.6	₹ 15	12.4	C.50	-39.9	1776	100
Total Mail Da	oth CD): 33	1705	10 04	425,0	29.90	13.3	10.50	47.0	1140	100
	pth (TD): 12.13	1710	10.13	426.0	29 21	1-1 6	051	-570	17 40	100
	Level (WL): 15.76	1715	10.45	4400	79.04	15.8	1.55	-7/.0	17 %	. 1,3 \$
One Casing \	/olume(gal/L):5.1 s	1730	16. 28	5160	29 49	1	1.53	- 920	17 40	100
		735	10,90	5°40	29 45	13.0	1.50	- 93.0	17 17/1	100
[3.78gals/L]	_ 	1740	10 43	139 c	29 .40	22	0.49	-93.7	17.70	7
							· · · · · · · ·	7 7		1:0
Start Purge (h										
End Purge (h										
Total Purge Ti	me (min): 39 min									
Total Vol. Pur	ged (gal/L):									
£8000 /	46 or									
7 L+.	+ 980 ml									· · · · · · · · · · · · · · · · · · ·
				SAMPLE F	ARAMETER	S				
Data:		Color	рН	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow Rate
	45	Description	pH units	mS/cm	℃	NTU	mg/L	mV	ft BTOC	m/min
ime (1 (ध्युप	- Kuy	1094	5-100	21.46	115	0 44	-738	17 -R	100
Ĉį	Analysis				TION INFOR					
<u> </u>			Preserv	ative		Contair	er Requirem	nents		Collected
	s Beta/Total Uranium/R	adium 226	HNO3 (pH < 2)	- 1	- 1 gal plastic	- 4/6 ML	- 1 5	5		100199
					- i gai piastic	cubitainer				
										
									 +	
			V2000000000000000000000000000000000000	PQ0000100000000000000000000000000000000	200000000000000000000000000000000000000					
_					INFORMATIO	34				
A Reading (p	pm):				Peristaltic F	oump	т	ubing Type:		
				!] Centrifugal] Bladder Pu]] Polyethylen	ıe	
] Tube Evaci	uation	D r	Teflon Teflon-lined	Polyethyles	
				į] Vacuum Ju	g Assembly	ı	,	oryennyleri	=
rcte if Applic	able:] Bailer S	ignature(s):				
MS/MSD	Duplicate ID No.:						1 1	1		
						1. N	M_{l}	Af		

Desired City A										
Project Site N Project No.: 7	lame: <u>NTC Orlando</u> '457/						Sample	Location: B	2273	DW-
[] Domes	tic Well Data		Flow-Thru C	Cell						DWOGI
IVI Manife	ring Well Data		Make\Mode	I: <u>HORIBA U</u>	<u>-22</u>			і ву: <u>С. Г</u>	n	
[\] MOISIO	nng vveli Data		Serial Nos.:	T00	1200	2	Sampled	. Ву: <u>С</u> - <u>Г</u>	TCOLY I	34 1
[] Other V	Vell Type:		·	•			C-O-C N	0.:		
O-sin-	Tau	T =	T		GING DATA	1		T	Τ	T
Casing Size (in.)	Gals Liter		pH units	S.C.	Temp.	Turbidity	DO mg/L	ORP mV	ft BTOC	Flow Rate
0.5	0.01 0.03		5 8/1	/2 220	100 2	2.18	1 2 2 2	-100	18.21	ml/min
1	0.041 0.15	1175	5 31	C 22'	27 2	2 72	2:10	5-100	10,61	100
1	0.163 0.61	11159	5.78	0.227	27.2	2 22	104	1-101	 	
4	0.653 2.4	11203	5.79	0. 222	27.2	2.08	2 47	1-104		
6	1.469 5.5	1208	5.75	0.22	27.3	2.03	1.92	-111		
8	2.611 9.8		5.75	0.025	21.4	11.99	1.89	-112	1,	
10	4.08 15.4	1214	5,75	0.225	21.4	1.97	1.83	-113	1/	
	[1 gal. = 3.785 L]									
PID Reading (p	pm): 🧷									
	<i></i>					ļ. <u>.</u>				
	- //	ļ	<u> </u>		ļ <u>.</u>					
Well Casing D						<u> </u>		<u> </u>		
Total Well Dep	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	 				ļ		<u> </u>		
Static Water Lo	1020		 			<u> </u>				
Tube Intake De	epth: 29.0				 		ļ	<u> </u>		
Start Duran /hr	v	1142	-		 			<u> </u>		
Start Purge (hr End Purge (hr)	7.7121	1176	 		 		<u> </u>			
Total Purge Tin		 		<u> </u>	-	 		-		
Total Vol. Purg		ļ <u>.</u>	<u> </u>		-	 		 		-
1014 101.1 419				· · · · · · ·		 				
		<u> </u>		<u> </u>	-			 		
		 			 -					
		1						<u> </u>		
		,	WATER	QUALITY	SAMPLE PA	RAMETER	5			
5 1 1 1 5	3 3/00	Color	pН	s.c.	Temp.	Turbidity	DO	ORP	DTW	Flow Rate
Date: 1 2	$\frac{\omega \omega}{2}$	Description	pH units	mS/cm	°C	NTU I	mg/L	mV	ft BTOC	ml/min
1111e. 1 <u>~ 1</u>	<u>.</u>	<u>litian</u>	الالتياك	O. LO	27.4 SINFORMA		1,83	<u> </u>	18,21	100
	Analysis		Preser		200820000	0.0000000000000000000000000000000000000	iner Require	ments	T	Collected
CL VOCs		8260B		HCI	-		40 ml	glass vials		3
VOCs/PAHs		8270C/8310		None			1-liter	amber glass		
Pesticides Herbicides		8081A 8151		None None			1-liter	amber glass		
K-tra Organic		8XXX		None			1-liter 1-liter	amber glass amber glass		
AL Metals		6000/7000		HNO ₃			1-liter	HDPE		
RPH		FL PRO		H₂SO₄			1-liter	amber glass		
comments:			<u> </u>	ADDITIONA	L INFORMA Method:	TION		Tubing Type:		
					Peristaltio			[] Polyethyle		Total
				•	() Centrifug [) Bladder f			[] Teflon Teflon-line	d Polyethylen	
					[] Tube Eva	scuation		/~		- I
					[] Vacuum [] Bailer	Jug Assembly				
530/		DAIGC SAM				Signature(s)	:			
MS/MSD:	10	Duplicate 10	No.:			16/2	, 9/N	our	~	
<u>N</u>	117	1	117				/L • · ·			

Date <u>100299</u>

									Pa	age` of _
Project Site		NTC Orlan	ndo			Sample	ID No.;	DW.	–	
Project No.:	:	CTO 0024		_		-	Location:	227		_
				_		Sample		- 12 3 23	m	_
[X] Monito	estic Well Data oring Well Data r Well Type:					C.O.C.				_
				Pü	RGING DATA					
Casing	Gals/Ft.	Time	рН	s.c.	Temp.	Turbidity	DO	ORP	DTW	Flow Bate
Size (in.)	of Water	Hr:Min	pH units	mS/cm	℃	NTU	mg/L	m∨	ft BTOC	Flow Rate
1	0.041	8955	5.03	7680	27.5Z	(0.0	3 20	396	15 80	
2	0.163	REC	448	271.0		24 7	23		15 93	
3	0.367	1005	475	7720		12.0	1 98	275		100
4	0.653	1010	1.02	27:0		87		17 3 14 7	1595	70
5	1.020	1015	4.93	2620		131	1 90		15 94	
6	1.469	1026	491				135	87	159=	FC
8	2.611	10.25	7.41	2060		79	181	5.6	1596	7.0
10	4.080	1030		264,E		74	1 34	1 21	15.55	<u> </u>
	<u></u>	1035	<u>+190</u>	2630		77	1 77	-0.5	14: 25	50
			14.95	7620	T	न <u>१</u>	1.70	-19	15 33	
·		1040	4.90	260.0	29 27	7.7	1.92	-5.5	15 88	च्य
		1045	490	2540		75	197	-6.7	15.73	70
*** * O Di	-0 57	1050	4.90	255.0		75	198	-7.7	15.7	80
Well Casing Di			4 90	2590	22 35	2.3	20	- 7. ×	5.30	हर
Total Well Dept		1100	4.90	0590	7.8 28	8.5	199	- 7.8	15 88	70
Static Water Le	evel (WL): 1537	<u> </u>								80
One Casing Vo	plume(gal/L): 5, 49	T						 		
	7	Γ						 		
[3.78gals/L]					 			 		
			 		 					
Start Purge (hrs	s) 19-		1							
End Purge (hrs		 	+		 	+		 		<u> </u>
	ne (min): (5 min		 		┼	+				
Total Vol. Purge	ed (gal/L):		+		 					
G Lt.	(gasa) History		 	 -	 	+				
<u> (î L.F.</u>			 	 -						
		Color	рН	SAMPLE S.C.	PARAMETERS					
Date: /CCGG	1	Description	pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	ORP	DTW	Flow Rate
Time: 11 0 5		Clear	471	259.6	27.36	NIU √ H	mg/L	mV	ft BTOC	ml/min
					CTION INFOR		198	~7.8°	15 66	हर
	Analysis	555555555555555555555555555555555555555	Preserv		3 31071 337		ner Requiren			2-0-4-4
1.61			HCL		- 3	16. 15	/ /	a 1 S		Collected
ecc Alpha/Gross	Beta/Fetal Licanium///R	ladium 226	HNO3 (pH < 2)		1 - 1 gal plastic		<u> </u>	113		1566.99
										
										
				POLICE		***************************************	***************************************			
***************************************					LINFORMATIC Method:	24				
A Reading (ppi	m):			i	[≺] Peristattic F [] Centrifugal			Tubing Type:		ĺ
				ì	[] Bladder Pu	ımp		Polyethyler Teflon	те	1
				į	Tube Evacu		i] Teflon-lined	d Polyethylen	e
				[[//] Vacuum Ju [] Bailer	ig Assembly	f			
ircle If Applica						Signature(s):			<u>^</u>	
MS/MSD I	Duplicate ID No.:			-		\sim	m/1	.1/1	1/L	1
	_					Tim	m / 1	11/1 220	IM	l
						// /		4 1 (A/MA)	/ U 🥨 L	ľ

Tetra Tech NUS Groundwater Purging and Sampling Log

Page 1 of i

Project No.: 74	457/						Sample I	Location: Z	273	
[] Domesti	ic Well Data		Flow-Thru C	اأه'			Samolo I		7/1/2	2736-B
l i j Domesu	c vven bata			: HORIBA U	-22					2/00
[X] Monitori	ing Well Data			9279			Sampled	By: KJA	<u>n</u>	
[] Other W	/ell Type:		Geriai 140s			-	C-O-C N	o ·		÷
				PUR	GING DATA					
Casing	Gals. Liters	Time	pH	s.c.	Temp.	Turbidity	DO	ORP	DTW	Flow Rate
Size (in.)	per ft. of Water	Hr:Min	pH units	mS/cm	°C	NTU	mg/L	mV	ft BTOC	ml/min
0.5	0.01 0.038									
1	0.041 0.155									
2	0.163 0.617	1009	5.46	. 247	23.5	4.4	4.37	174	1203	100 ml/
4	0.653 2.47	1016	5.44	.262	243	40	3.95	171	18 75	100
6	1.469 5.56	1025	5 45	, 255	24.5	2.4	2.73	86	1350	70 ML
8	2.611 9.88		5.39	.252	245	2.2	2.97	- 7	1843	80 ML
10	4.08 15.44		5.37	249	243	20	2.52	-18	1841	80 ML
	[1 gal. = 3.785 L]		5.37	747	24.6	18	256	-23	18.40	Rim
			<u> </u>		1		230	1	12:10	3074
PID Reading (pp	m): ½ 0200							-	 	
	m): 32 gom				 			 	 	
			<u> </u>	ļ	<u> </u>		-	 	 	
Well Casing Dia	ameter: 2" PIL		<u> </u>		<u> </u>			 -		
Total Well Depti					 	 		<u> </u>	 	
Static Water Le					 			 	 	
Tube Intake Dep						-		<u> </u>	 -	
- TODO MILLINO DO	P 42-0				 				 	<u> </u>
Start Purge (hr):	10:05					 			 	<u> </u>
End Purge (hr):								 		
	e (min): 37 m/								 	<u> </u>
			<u> </u>						ļ	
Total Vol. Purge					-			 		
1 29	HU ML				ļ		<u></u>	<u></u>		
	· · · - -	-			ļ <u>-</u> -					
										
			*/**FF				******************************			***************************************
		Color	pH	S.C.	Temp.	RAMETERS Turbidity	DO	ODD	D.T.	FI B.A
Date: 113000) 	Description	pH units	mS/cm	°C	NTU	mg/L	ORP mV	ft BTOC	Flow Rate ml/min
Time: 1045		clear	531	.247	246		2.56	-28	17.40	80 nL
		<u> </u>	*******************		INFORMAT				17.7-	70 NC
	Analysis		Preser				ner Require	ments		Collected
CL VOCs		8260B		HCI		(3)	40 ml	glass vials		113000
<u> 1009</u>		8270C/8310		None		<u></u>	1-liter	amber glass		
VOCs/PAHs				None				amber glass		
VOCs/PAHs esticides		8081A		None		1 '	1-liter	amber glass		
VOCs/PAHs resticides rerbicides		8151				4 0	1 154			l l
VOCs/PAHs esticides erbicides -tra Organic		8151 8XXX		None				amber glass		
VOCs/PAHs esticides erbicides -tra Organic AL Metals		8151		None HNO ₃		1 .	I-liter	HDPE		
VOCs/PAHs esticides erbicides -tra Organic AL Metals RPH	(8151 8XXX 6000/7000 FL PRO		None HNO ₃ H ₂ SO ₄	LINFORMA	1 1	I-liter			
VOCs/PAHs esticides erbicides -tra Organic AL Metals RPH	(8151 8XXX 6000/7000 FL PRO		None HNO ₃ H ₂ SO ₄	Method:	1 1 1 TION	I-liter I-liter	HDPE amber glass	:	T 1 . l
VOCs/PAHs esticides erbicides -tra Organic AL Metals RPH	(8151 8XXX 6000/7000 FL PRO		None HNO ₃ H ₂ SO ₄	Method:	1 1 1 TION	I-liter I-liter	HDPE amber glass Tubing Type [) Polyethyl	ene	Total
VOCs/PAHs esticides erbicides -tra Organic AL Metals RPH	(8151 8XXX 6000/7000 FL PRO		None HNO ₃ H ₂ SO ₄	Method: [A] Peristaltid [] Centrifug [] Bladder F	1 1 TION Pump al Pump Pump	I-liter I-liter	HDPE amber glass Tubing Type [] Polyethyl [] Teflon	:: ene ed Polyethyler	10,
VOCs/PAHs esticides erbicides -tra Organic AL Metals RPH		8151 8XXX 6000/7000 FL PRO		None HNO ₃ H ₂ SO ₄	Method: [1 1 TION Pump al Pump Pump cuation	I-liter I-liter	HDPE amber glass Tubing Type [] Polyethyl [] Teflon	ene ´	10,
VOCs/PAHs /esticides lerbicides -tra Organic AL Metals RPH	1017 Slow nin Because Durpping	8151 8XXX 6000/7000 FL PRO	Putc to	None HNO ₃ H ₂ SO ₄	Method: [1 1 TION Pump al Pump Pump	I-liter I-liter	HDPE amber glass Tubing Type [] Polyethyl [] Teflon	ene ´	10,



								Page	of
Project S Project N	ite Name: lo.;	NTC	orl	ANDO		Sample Sample	<u> </u>	- 6 E	
						Sample		V377	n
	nestic Well Data					C.O.C.			
	itoring Well Data					type_of	Sample:		
	er Well Type:						v Concentra	ation	
[] QA	Sample Type:						h Concentr		
SAMPLING D	ΔΤΔ								
	1-99	Color	pН	S.C.	Temp.	Turbidity	- 50		· · · · · · · · · · · · · · · · · · ·
	40	(Visual)	(S.U.)	(mS/cm)	(°C)	1	DO	Salinity	Other
Method: TP-		(lew	5.37	/-//. O	27.67	7. 8	(mg/l) 2,02	115Z	ORP
PURGE DATA		Cens	13.57	1-11.0	2/4/	7.0	210 6	D74U	-43-7
Date: 1001	99	Volume	pН	s.c.	Temp.	Turbidity	DO	Salinity_	Other OC
Method: M.C		420	4.99	123.0	20.27	3.9	2.18	1752	39.3
Monitor Readi		0925	4.96	121.0		497		1/30	
	iameter & Material	930	525				2.15		24.6
Type: 2	DVC	935		123.0	76.70	3 75	1.98		9.4
	<u> </u>		509	125.0	26 76	2.24	1.95		1.7
	oth (TD): 46,35	940	5.10	126.0	26-76	1-75	197		<u>-32</u>
	evel (WL): 16.94	945	5 19	129-0	7Le-80	1-15	1-91		-14.0
	olume(gal/L):5 g	750	5-21	131.0	26.85	1.90	1 89		-21.0
Start Purge (hr		955	523	132.0	20.45	27	1-88		-25.7
End Purge (hrs	s): 1040	1000	5.24	133.0	27-10	3-4	1-84		-26.9
Total Purge Tir	me (min): 77.ກ. <i>N</i>	1005	5.24	134.0	2715	4.9	1-91		-27,2
Total Vol. Purg	ed (gal/L): 7.7 4	D/O	5.29	1370	27.03	7.2	1.43		-29.7
SAMPLE COL	LECTION INFORMAT	ION:							
	Analysis		Preserv			Container Re	quirements		Collected
VOC			ACC		3 x 4	omic l	las		100199
PAH			<u> non</u>	<u>e</u>					
·····							 		
									
									
·····	· · · · · · · · · · · · · · · · · · ·								
								+	
								 -	 -
OBSERVATIO	NS / NOTES:								
				-					
									Í
Circle if Applic	able:				-	Signature(s):		· · · · · · · · · · · · · · · · · · ·	<u>.</u> .
MS/MSD	Duplicate ID No.:					/	,		
					1.	1 1	Mary	4	i
	<u></u>					/ Klin f	1 / June	M	

						·				
Project Site Na Project No.: 74	arne: <u>NTC Orlando</u> 457/						Sample L	ocation: <u>B</u> 2	273	DW-8
[] Domest	ic Well Data		Flow-Thru C				Sample I	No.: N.2	2736i	180WC
[X] Monitori	ing Well Data			HORIBAU	_	,	Sampled	ву: <u>(¹ . ў́</u>	norris	4
[] Other W	/ell Type:		Serial Nos.:	TO04	12002	•	C-O-C No	.:		
				PUR	HNG DATA					
Casing	Gals Liters	Time		s.c,		1	ро		574	T =
_			рН		Temp.	Turbidity		ORP	DTW	Flow Rate
Size (in.)	per ft. of Water	Hr:Min	pH units	mS/cm		NTU	mg/L	mV	ft BTOC	ml/min
0.5	0.01 0.038	11544	5.09	0.10	25.0	4.51	16.03	193	119.22	100
1	0.041 0.155	1549	5.04	0-100	24.6	3 52	5.97	205	,	
(2)	0.163 0.617	1554	5/2	166	245	3.08	4 102	213	 	
4	0.653 2.47	11-1-1	K 02	2 100	21/2	2000	11010		 	
		1122	5.03	0.109	24.5	10.40	4.20	220	 	
6	1.469 5.56	$\mu \nu \nu \tau$	5.07	0.104	24.5	2.00	4.13	221	1-1/-	
8	2.611 9.88	1/407	5,02	10-104	a4.4	12.01	4.11	222	4/	
10	4.08 15.44			1					T -	
	[1 gal. = 3.785 L]	T							†	
	1-0		 	 	 	<u> </u>	<u> </u>	 	 	
DID Do *		 	<u> </u>	 	 	<u> </u>			 	
PID Reading (pp	om): ' ()	<u> </u>				ļ			<u> </u>	
		<u> </u>							<u> </u>	1
Well Casing Dia	ameter: 2	f		-					†	
Total Well Dept		1							 	 -
										
Static Water Le		<u> </u>								
Tube Intake De	pth: 43.35	1								
Start Purge (hr)	1531	<u> </u>								
		 								
End Purge (hr):	100 /									
Total Purge Tim	e (min):									
Total Vol. Purge	ed:	!								
 		l								
		ļ. 								
**										
		i								
			WATER	QUALITY S	AMPLE PA	RAMETERS				
	i	Color	рН	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow Rate
Date:	30100	Description	pH units	mS/cm	°C	NTU	mg/L	mV	ft BTOC	ml/min
Time:	5	Clear	5.02	0.104	,24-4	2.01	41.11	277	19.22	100
				ANALYSES			•••	10.07.4	1.00	-:
	Analysis		Presei				ner Requirer	nents		Collected
CL VOCs_		8260B		HCI				glass vials		q
VOCs PAHs		8270C/8310		None				amber glass		3
esticides		8081A		None		<i></i>				
erbicides		8151		None				amber glass		
-tra Organic		8XXX		None				amber glass		
AL Metais	· ·	6000/7000		HNO ₃	-			amber glass HDPE		
RPH		FL PRO		H ₂ SO ₄						
V-11		, L , NO			INECOSE *		1-liter	amber glass		
omments:				ADDITIONAL	_HVFURMA Method:	* IUN		Tubing Type	•	
					Peristaltion Centrifuga Bladder F Tube Eva	al Pump Pump		Polyethyl	ene TO	4al 18
	G	AIQC SAMI	PLES			Signature(s):		-		
MS/MSD: ;		Duplicate ID		<u>, , , , , , , , , , , , , , , , , , , </u>		11	nM	0/ -		
meli	men 1	•	NA			Ch	W\ 11($y \sim$	<u> </u>	ļ
<u> </u>	715D		14 JIJ					_		

CONTINUATION



GROUNDWATER SAMPLE LOG SHEET

	····						Page	of
Project Site Name: Project No.: [] Domestic Well Data [] Monitoring Well Data [] Other Well Type: [] QA Sample Type:					Sample Sample C.O.C. Type o		227 227 ation	K8 200
SAMPLING DATA:		.,						
Date:	Color	pН	s.c.	Temp.	Turbidity	DO	Salinity	Other
Time:	(Visual)	(S.U.)	(mS/cm)	(⁰ C)	(NTU)	(mg/l)	(%)	<u>L</u>
Method:	apri	537	141.0					
PURGE DATA:	T THE	,			,		Dia	
Date:	Volume	pН	S.C.	Temp.	Turbidity	DO	-Salinity	-Other OKA
Method:	1015	5.32	140.0	26 99	7.9	1.93	1752	35:4
Monitor Reading (ppm):	1020	5 34	141.0	27.21	7.7	195	,	-40.7
Well Casing Diameter & Material	1025	5 36	141.0	2751	7.9	1.48	 	-42.7
Type:	1030	K-36	41.0	2756	7.8	2.00	- /	-43, v
Total Well Depth (TD):	1635	537	1410	27.57	1	202		-43.4
Static Water Level (WL):	1040	5 37	1410	27.67		7-02		
One Casing Volume(gal/L):	10 10	127	1-11.0	21.01		2-02	-V	-43.8
Start Purge (hrs):	 	-			 -			
End Purge (hrs):	 	 						
Total Purge Time (min):		 		·				
Total Vol. Purged (gal/L):	 							
SAMPLE COLLECTION INFORMA	TION:	.1						
Analysis	TION.	Dress	4:		<u> </u>			
Allaiysis		Preser	ative	-	Container Re	equirements		Collected
		 						
		 						
								
								
		· · · ·						
-						<u>. </u>		
DBSERVATIONS / NOTES:								
								Ĭ
ircle if Applicable:	<u>. </u>		<u>-</u>		Signature(s)	<u> </u>	·	
MS/MSD Duplicate ID No.:					<u> </u>			
				ľ				j
I				1				

A

715834812337

Groundwater Purging and Sampling Log Page _1_ of_ Tetra Toch NUS Dess Project San Name NTC Ollando Dw09 Project No 7457/ Sample 10 No B 2273-DW09 Flow-Thru Call () Doniestic Well Date MANAGER HORIBAU-22 Samples By RB + CW [X] Monitoring Well Date 60 449 Sensi Nos . C-C-C No STREET, [] Other Wed Type Flow Rate ORP DTW Turblany Torne. S.C. Galg 200 Time pΜ Casing T BYOC **UNITAL** mS/cm πV phi undis per IL of Water HMA Suze (In.) 26.35 983 2.37 10.64 17.60 0940 40.6 0 038 0.5 0 01 300 1,67 26,27 D 155 0 001 300 -30 26133 10.48 0.151 2 -22 300 26.34 6.31 20 1000 10,29 0 653 • 250 to 250 mb/min 54 1000 Turned down 1.489 nuna 5 -138 26.58 2.66 8 88 1010 7.10 2511 2677 1,80 0:65 6.97 15.4 1020 16 4.00 to 200 ml/min Tured down [1 gas - 3 785 L] /020 6 26.95 0.95 6,90 0.55 -110 1027 64.9 26.96 0.93 64.5 27.05 0.91 26.96 0.93 6,90 0.51 -108 1033 PID Resound (Opin). 0,49 6.91 -108 1040 1043 END PURGE Wen Casing Diameter Total year Depth. 43-60 17-74 SEEDE WARDE LENES Tube intake Depth <u>≈40 K</u> Son Purge (NO 0937 1043 Eng Purpe (NO): Total Purge Tene (min): (p (TOOM VOI Purgost 560 WITH WAR THAN THE PARTY OF THE From Rute DO DTW TURNO Cotor Pf TR BTOC **DALCHU** m\$Jon NTU AQ/L bl: rlugg Description Tyre ANALYSES INFORMATION THE COUNTY WAS AND STONE OF COM-पुर ६,१ जिल्ली Contomer Requirements Preservative Analys.s 3 40 ms -**32508** HQ TCL VOCE HDPE 6000/7000 HNO, 1-1407 TAL MOUNE HOPE 1-l4er 300 1 Cool to 4C Anone/Altainity 2 gals or Butters Coa to 4C Trompoudy Shary n/a ADDITIONAL INFORMATION Maria Programme Control Tuesing Type. PROMINE PLMP | | Polyestylene Compugal Pump [] Tellion Totlor-lines Polyethylone Tues Execution) Vacuum sug Assembly Bayer Signature(s). QNOC BANKUES

Dupherm ID No.:

MEWSD.

Page 1 of

,											+
Project Site !	Name: <u>NTC Orland</u>	n								-	7
Project No.:		×					Sample !	Location: 8	2272	3 DIN-	17
,								_		<u> </u>]/
[] Domes	stic Well Data		Flow-Thru	Cell			Sample I	D No.: N 2	3936	DOYI)	7
			Make\Mode	el: <u>HORIBA U-</u>	<u>22</u>				N a	10 112 29736 240	DW.
[X] Monito	oring Well Data				_ 1.4.5		Sampled	By: (' . 1)	Jorri.	Xi)	, IL 441
			Serial Nos.	T004	<u>えのひみ</u>			- <u>,, </u>	10-1	_,	1
[] Other \	Well Type:						C-O-C No	0.:			ł
				PUR	GING DATA						8
Casing	GalsLite	rs Time	рH	s.c.	Temp.	Turbidity	DO	ORP	DTW	Flow Rate	٦
Size (in.)	per ft. of Wate	r Hr:Min	pH units	mS/cm	°C	NTU	mg/L	mV	ft BTOC	m/min	-
0.5	0.01 0.03	38 10110	7.00	10.139	24.2	1.51	3-100	-57	17 19	100	┪
1	0.041 0.15		5.0	10.11	24.2	195	2.03		 	100	┥ .
/2/	0.163 0.61	17 1024	2 5 00		74 7	1.93			 	 	┥
4	0.653 2.4	1000		100	137.3		2.49	1 111	 		4
			5.09	10-101	34.7	1.85	2.45	1-40		1 1	_]
6	1.469 5.5				24.Q	1.89	2.43	-42			
8	2.611 9.8		5.10	0.100	24.3	1.84	3.41	-44	U	V	7
10	4.08 15.4	14		_i							
	[1 gal. = 3.785 L	-]						<u> </u>		1	1
		-						<u> </u>		 	1
PID Reading (p	ppm): (1
				 						 -	-
			+	 						 	4
Well Casing D	Diameter: 2"		 	 							1
				 						L	1
Total Well Dep	<u> </u>	<u>, </u>	. <u>.</u>								
Static Water L	evel: し,かり	<u> </u>		<u> </u>	j						1
Tube Intake De	epth: 29.0	<u> </u>]							1
	-									 	1
Start Purge (hi	n: 1006									 	1
End Purge (hr)			 	†~~~						 	İ
Total Purge Tir	<u> </u>	 	+	 							
Total Vol. Purg		 	 	 							
Total Vol. Pulg		 	 								
	 		ļ <u>.</u>	ļ						<u> </u>	
· · · · · · · · · · · · · · · · · · ·			ļ								
	· · · · · ·									-	
			WATER	QUALITY S	AMPLE PA	RAMETERS					
	i	Color	рН	s.c.	Temp.	Turbidity	DO	ORP	DTW	Flow Rate	
Date:	30100	Description	pH units	mS/cm	℃	NTU	mg/L	mV	ft BTOC	ml/min	
ime: () 之	1 6	Clear	5-10	0.10%	24.3	1,84	2.41	-44	17 19	100	
				ANALYSES			<u> </u>			1.0	
	Analysis		Presei				ner Requiren	nents		Collected	
L VOCs		8260B		HCI				glass vials		3	
OCs/PAHs		8270C/8310		None				amber glass			
sticides		8081A		None				amber glass			
rbicides		8151		None				amber glass			
ra Organic		8XXX		None		1 or 2 1		amber glass			
L Metals		6000/7000		HNO ₃		1 1		HDPE			
PH		FL PRO		H ₂ SO ₄		1 1	-liter a	amber glass		-	
			7	ADDITIONAL		ION					
mments:				1	Peristaltic Peristaltic Centrifugal Bladder Pu Tube Evac	l Pump ump		Tubing Type:] Polyethyle] Teflon Teflon-line		Total	,3
(0)000000000000000000000000000000000000				<u> </u>] Bailer						
	· · · · · · · · · · · · · · · · · · ·	QA\QC SAM				Signatur e (s):					
MS/MSD:		Duplicate 10	No.:			/i1	$\mathcal{L}\cap$	_			
$N_{\rm c}$	117	l kil	1			$-1'l_{\rm M}$	1711	ani		_	
	1 '					CVW					



Tetra Tech NUS, Inc. GROUNDWATER SAMPLE LOG SHEET

								rage	<u> </u>
Project Si		NT	<u> </u>	RLAN	06		e ID No.:	miu-	-4
Project No	o.:						e Location:		273
						Sample		KSM	
	estic Well Data					C.O.C.			
	toring Well Data						f Sample:		
1 -	r Well Type:						v Concentr		•
I QAS	Sample Type:					_ [] Hig	th Concent	ration	
SAMPLING DA				·					
	3094	Color	pН	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 1440		(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	Persh	ORP
Method: Fef k		Clear	(c.13	345,0	24.48	19.0	3.72	1,99	-116.6
PURGE DATA	:							- ++	1 1 1 4 1 (7:
Date: 0930	99	Time	pН	S.C.	Temp.	Turbidity	DO	Sailinity	Other OK
Method: MiCa	o Ring	1157	6.24	346.0	28.6	26.4	2.94	6.99	-4/2.6
Monitor Readin	g (ppm):	1206	6.25	337 0	29.02	25.0	2.61	1	-65.5
Well Casing Dia	ameter & Material	1215	6.24	331,0	29.16	24.8	2.52	 	- 7/. 7
Type: Z'	214	1223	6.23	341.0	29.14	24.2	2.48		-72.6
Total Well Dept	th (TD): 15:01	1235	6.21	344.0	29.24	252	2.47	 	-77.5
Static Water Le	vel (WL): 4 . 95	1250	6.19	346.0	29.13	24.8	2,50	 	~84.5
One Casing Vol	lume(gal/L):/.3=、	1320	10.14	317-0	29.29	22.4	2,73		-99.7
Start Purge (hrs		;3 <i>5</i> 0	6.14	3460	29 24	20.1	3.05		-107.5
End Purge (hrs)): 1436	1415	4.13	3450	29.44	20 0	3.52	 	-/13.4
Total Purge Tim	ne (min): /65 m.N	1425	4.13		29 40	145	3.68		~114.6
	ed (gal/L): /とうい		le-13	345.0	29.48	19.0	3.72		-1166
SAMPLE COLL	ECTION INFORMAT	TION:							-71.0
	Analysis		Preserv			Container Re	equirements		Collected
VOC			1600	_	3 x 4		U.ALS		093099
							- 1 - 2		<u> </u>
· .									
 									
· ·									
									
									
OBSERVATION	IS / NOTES:								
									
Purge K	Cate Aver	iged 1	between	in 8	0 mL/10	om L	P/MIN.		
	1	V,	1 1		1.		0	12 /	1 11
100019	ty @ 190	60 4	mecy)	5 SV	mpa	as pe	i m	te (Ain	411
									j
Circle if Applica	ible:					Signature(s)	;		
MS/MSD	Duplicate ID No.:					,	1 1	11	ĺ
						3/10	111	$\mathcal{A}\mathcal{A}$	ŀ

							_		ŀ	Page/_ of
Project Site		NTC Orla	ando			Sample	e ID No.:	<i>i</i> 21 <i>i</i> . =		
Project No.:		CTO 002					e Location:	17 hu		
1						Sample				
[X] Monito	stic Well Data ring Well Data					C.O.C.		<u> </u>	<u>^</u>	
[] Other	Weil Type:									
						•				
Casing	Gals/Ft.	Time	pH	s.c.	JRGING DATA		T			
Size (in.)	of Water	Hr:Min			Temp.	Turbidity NTU	+	ORP	DTW	
1	0.041	152		931 0			mg/L	mV	ft BTO	
2	0.163	1535		9660			2.96			100
3	0.367	1540		975 O			230	45 3	11.93	
4	0.653	1545		17/10		0.00	210	1325	1198	
5	1.020	1550			30 75	0.00	201	66.3	11.92	
6	1.469	1555		9760		0.00	191	63.4	11 98	100
8	2.611	1600	6.59	9780		6.00	1.76	(2.6	11 93	100
10	4.080	100	10.21	2-30	30 63	000	1 82	(3.0	11.97	100
		+		+	+	┼	├ ──	 		
		 	+	 		┼──	├ ──			
		 	+			 	├			
		 		 	┥───	<u> </u>	 		<u> </u>	
Well Casing Dia	meter	 	+	∔		ļ	<u> </u>			
		 	+	↓			<u> </u>			
Static Water Levi	r (TD): 1を33 vel (WL): イブ	 		 						
One Coning Value	rel (VVL): L	 	 	<u> </u>						
One Casing Void	ume(gal/L): 1-0(5)									
	· · · · · · ·		 					 	 	
[3.78gals/L]			<u> </u>					 	 	
 					T			 	 	+
Start Purge (hrs)					T			 	 	
End Purge (hrs):								 	 	+
Total Purge Time	(min): 45 min							 	 -	
Total Vol. Purged	l (gal/L):							 		+
700 M	<u>k</u>				 			 		+
4,5 6	$oldsymbol{I}_{-}$				 			├──┤		+
				SAMPLE	PARAMETER	S				
Date: Cot 1	11 40.29	Color	pН	s.c.	Temp.	Turbidity	DO	ORP	DTW	Flow Rate
Date: (27 1	1499	Description	+	mS/cm		NTU	mg/L	m∨	ft BTOC	ml/min
ille 161c		<u>1610</u>	1659	97720	30.61	ປີ. ຜູ້ຕ	(-31	633	1693	100
	Analysis				CTION INFOR					1
	- Allanyo.c		Presen	vative		Contair	ner Requirer	ments		Collected
oss Alpha/Gross B	eta/Total Uranium/Re	adium 226	HNO3 (pH < 2	7)	1 - 1 gal plastic	a subitainer				100199
1EC 87	60		,	'	1 - 1 gai piasac	Cubitainer				-
t (PI+	Z260									
MIBE-	3260									V
	<u> </u>									

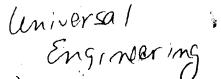
					LINFORMATIC	3M				1
A Reading (ppm):				Method: Peristaltic F	Pumo		Tubing Type:		
				İ	Centrifugal	Pump	[Tubing Type: [] Polyethyle:	:ne	
				!	Bladder Pu Tube Evacu	imp	ţ	✓ Teflon		
				ļ		uation Jg Assembly	I] Teflon-line	d Polyethyle	ne
rcle if Applicab	le:				Bailer					
	uplicate ID No.:				s	Signature(s):	1			
					-	1/,	1 21	M		
						Kari	f No	rall		
						· , 				

Pesticides Herbicides X-tra Organic TAL Metals TRPH Comments:	ected MTI unpre	((3XXX 6000/7000 FL PRO	,	None HNO ₃ H ₂ SO ₄ ADDITIONAL	Method: Peristaltion Centrifuga Bladder F Tube Eva	1 or 2 1 2 == TION Pump al Pump	1-liter ; 1-liter 1 1-liter ;	amber glass HDPE amber glass Tubing Type [] Polyethyl		2 otal
Herbicides X-tra Organic TAL Metals TRPH	ected	((3XXX 6000/7000 FL PRO	,	None HNO ₃ H ₂ SO ₄ ADDITIONAL	Method: Peristaltic	1 or 2 1 2 == TION	1-liter ; 1-liter 1-liter ;	HDPE amber glass Tubing Type [] Polyethyle		2 0 1 a
Herbicides X-tra Organic TAL Metals TRPH		(3XXX 5000/7000		None HNO ₃ H ₂ SO ₄ ADDITIONAL		1 or 2 1 2 =	1-liter ; 1-liter ; 1-liter ;	HDPE amber glass		3
Herbicides X-tra Organio TAL Metals		(3XXX 5000/7000		None HNO ₃		1 or 2	1-liter : 1-liter	HDPE		<u>ු</u>
Herbicides X-tra Organic			BXXX	· · · · · · · · · · · · · · · · · · ·	None		1 or 2	1-liter :			
Herbicides									amber dises		
					1 W L 11 M			1-11164	amber glass	1	
LADETICIAN			3081A 3151		None None				amber glass		
1			3270C/8310 3081A		None	 			amber glass		
SVOCs/PAHs			3260B		HCI None				glass vials		3_
TCL VOCs	Analys		3260P	Preser				ner Requirer	_		Collected
	A1	-i-	T		ANALYSES	INFORMAT					
Time:	1411		('Lax I	$U_{\sigma} \coprod$	0.549	273	<u> २. ५१।</u>	1,55	- Le	14.54	100
Date:	30 00	2	Description	pH units	mS/cm	°C	NTU OTA	mg/L	mV	ft BTOC	ml/min
Data 1	0 2 2 2		Color	pН	s.c.	Temp.	Turbidity	DO	ORP	DTW	Flow Rate
				WATER	QUALITY	AMPLE PA	RAMETERS				
											•
										-	
											_
		I									
Total Vol. F	ırged:										
Total Purge		39							 		
End Purge		100									
Start Purge		27			ļ		L				
Ctr. d. C	/b-1/	22						. 			
Tube Intak	Deptin.	<u>: 33</u>			ļ-		 				
Static Water		50	/		<u> </u>		<u> </u>		ļ		
	<u> </u>	33′			 		 	_	<u> </u>		
Total Well							<u> </u>		 	 	
Well Casir	Diameter:	<i>3 i</i> r	-	-			 		 	 	
 	~			<u> </u>	 				ļ- 	 	
	<u> </u>						 			 	
PID Reading	(ppm): 77	カー			 		 				
		<u>-</u> -	1-100	<u> </u>	100 2 1 1	<i>L</i> 1, 5	(X.) 1	1.35	<u> </u>	 	
	[1 gal. =	3.785 L)	140(0	10 71	0.549	272	2 39	150	-6	14	 /
10	4.08	15.44	1403	6.71	0 550	27.4	2.41	157		1 1/	
8	2.611	9.88	1400	6.11	0.550	11.3	2.41	1.58	-7	1 1	
- 6	1.469	5.56	355	10.72	0.552	275	3.45	1.04	-8	 	
4	0.653	2.47	1350	4.72	0.567	21.5	413	1.09	-17		
2	0.163	0.617	1345	1c.12	0.589	21.4	10.70	1.79	-10		
1	0.041	0.155	1340	6.71	0.633	21.3	32-11.4	a.11	-20	1	1
0.5	0.01	0.038	1335	6:12	0.690	27.1	14.4	2,33	-104	14.54	100
Size (in	per ft. c	of Water	Hr:Min	pH units	mS/cm	℃	NTU	mg/L	mV	ft BTOC	ml/min
Casing	Gals.	Liters	Time	pН	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow Ra
					PUR	HING DATA					
[] []	er Well Type:_			ocha moo			<u>.</u>	C-O-C No).:		
[] MO	itoring Well D	Jata		Serial Nos.:	T004	1200	\mathcal{L}	Sampled	By:	T CV V	134
(, , , , ,					I: HORIBA U-	_	_		Λ.	Ω_{1}	. < 1
[] Do	nestic Well Da	ata		Flow-Thru C				Sample II	D No.: No.	<u> 13730</u>	<u>mwo</u>
Ī											 '
1 '	.: 7457/	- Silarido						Samnie I	ocation:	(2,27	semi
l l	e Name: <u>NTC</u> .: 7457/	Orlando						Sample L	.ocation:	3277 12730 Morr	3em

									P	age $\underline{/}$ of $_$
Project Site	Name [.]	NTC Orla	ndo							
Project No.:		CTO 002		_			e ID No.:	1116	-1	-
				-			e Location:	7.7.7		
[] Domes	stic Well Data					Sample C.O.C.		K51	<u>n</u>	_
[X] Monito	ring Well Data Well Type:						. NO			_
					IRGING DATA		000000000000000000000000000000000000000			
Casing	Gals/Ft	Time	рН	s.c.	Temp.	T	T			
Size (in.)	of Water	Hr:Min	pH units			Turbidity NTU		ORP	DTW	Flow Rate
1	0.041	fi 17	4.24	4130			mg/L	mV_	ft BTOC	ml/min
2	0.163	1117				5.13	2.46	-32.6	1113	ICc-
3	0.367		6.47	451		45	1 75	-37 2	11:13	100
4	0.653	1122	6.52	161		34	165	235 Ú	1113	102
5		1127	6.55	1965		3.5	156	- 35.8	11.73	100
	1.020	11.32	6.55	4670	28.31	3,5	151	- 39.4	16.13	100
6	1.469	1137	<u>lu 56</u>	470.0	25.32	<u> </u>	1.48	-410	11 13	100
8	2.611	1142	1 5/2	41.70	27 3/	29	1-47	-41.5	11.13	112.6
10	4.080	1147	2.50	4700	23.50	29	1.54	-4/3	1113	150
							 		1113	
							+		 	
	· ·						 	+		
						 	 	-	_	<u> </u>
Well Casing Dia	imeter: 🏗 🎺	 	 	 -	 		 	 	<u> </u>	
Total Well Depti		 	 		 					
Static Water Lev		 	 	ļ			ļ			
One Cosine Vel	ver (VVL). 11.11		 	-			<u> </u>			
Offe Casing Voi	ume(gal/L) c S(g	/	ļ	ļ						
		ļ			<u></u>					
[3.78gals/L]										
										
Start Purge (hrs)):_ H]				†					ļ
End Purge (hrs)	1147				 			├──		
Total Purge Time	(min): 3 (c M				 		 	 		
Total Vol. Purged	d (gal/L):	<u> </u>			 			ļ		
200	ml a		 		 			ļ		<u> </u>
3.6	1.1			 						
<u>> , </u>	Cl		<u> </u>	253000000000000000000000000000000000000	11					
		Color			PARAMETER	*****************				
Date: しょうの		Description	pH pH units	S.C. mS/cm	Temp. ℃	Turbidity	DO	ORP	DTW	Flow Rate
Time: 1/50	<u></u>	11.AK	1: 614	-:70.0	+	7.2	mg/L	mV	ft BTOC	ml/min
		['4 #4.*			CTION INFOR		1.75	-413	11,/3	100
	Analysis	<u> </u>	Presei		-CHON INFUR					
			32.	- Tudite			iner Require			Collected
oss Alpha/Gross E	Beta/Total Uranium/R	ladium 226	HNO3 (pH < ;	2)	1 - 1 gal plastic		C ML	46 14		1666947
					y gar plasti	o oobitaii jei				
										
555600000000000000000000000000000000000	000000000000000000000000000000000000000									
				ADDITIONA	L INFORMATI	ON .				
/A Reading (ppm	n):				Method:	D				
					[] Peristaltic [] Centrifuga	Pump Pump		Tubing Type: Polyethylei		
					[] Bladder Pu	ımp	!] Teflon		
					[] Tube Evac [] Vacuum Jo		į] Teflon-line	d Polyethyler	ie l
10.10.10.10					Bailer	-a coscilloly				
MS/MSD D						Signature(s):	/		1	
MISTMSD L	Ouplicate ID No.:]	1	// ^			j
					,	1 / 1/3 1	/1/	$\gamma_{l_{\alpha}}$, it	To .	
						1000	WIT /	19.A.A.I.M	<u>/ </u>	· •

APPENDIX G CHAIN-OF-CUSTODY FORMS

Chain of Custody Record





QUA-4124		`	•		\mathbf{O}									
Tetra Tech NUS			Project Manager			-			Date	(Chain Of	Custody	Number 528	
Address									(O) Lab Number	01/99			- 528	92
800 Oak Richge Tur	noike		Telephone Numb	ber (Area Code)/Fax Numbe	ır			Lab Number					<u> </u>
City State	Zip Code		Site Contact								Page _		_ of/_	
City Colk Richard State	3783	30	,							 	Ana	alysis		
			Carrier/Waybill N	lumber] []]		1 1		
NTC Orlando - BLOS.	1173									40			1 1 1	
Contract/Purchase Order/Quote No.	,,,,,		- 							1 / 1				i
							1			y				
Sample I.D. No. and Description	Dạte	Time	Sample Type	Total Volume	Contain	ners No.	Preservative	Condition o	n Receipt					
NTC 2273 DWG 0002	9/8/99	0954	SOIL	10,0,110	Туре	IVO.					<u> </u>			L
NTC 2273 DWG 0810	7 0/ 7/	1014	1012	ļ	-	 	*	-						
NTC 2273 DWG 1012	 	1014	 		 -	+		 						
NTC 2273 NWW 1820		JUAN CO	 			11		ļ						
NTC 2273 DW/ 2224	 	1031	1					ļ			<u> </u>			
NITC 2273 Duy 21 20	 	DYE	1	<u> </u>	ļ		 -							
NTC 8273 DW6 2830	 	1052	 	ļ. ———	ļ	 								
NTC 2273 DWA 3840	919/99	1104	 											
NTC 1273 DW8 4042	7/9/79	1419	 		ļ	1								
VIC 00 13 DWO 4042	· · Ψ ·	144								\mathbf{V}				
						<u> </u>				•				
								ļ						
							<u> </u>							
														
Special Instructions	l													
	-												,	_
Possible Hazard Identification			·		Sample D	Disnosal								
Non-Hazard Flammable Skin	Irritant	Poison B	Unki	nawa		turn To	the state of the s							
Turn Around Time Required			QC Level	IOWII	Project S _j	necific (Client Speciful	Disposal l	By Lab	Archive Fo	or	Month	ns	
☐ Normal ☐ Rush			□ <i>t</i> . □ <i>u</i> .	□ <i>III</i> .	1. 10,001 0,	pocific (Specily)							
1. Relinquished By			· · · · · · · · · · · · · · · · · · ·	Time	1. Receive	od Du								
Suis Sarter	7		10/0/199	₽	7. Fibeeive	eu by /	11	dal S	a ' .a.	a	Date	, ,	Time	
2: Relinquished By			Date /	Time	2. Receive	ed By	Lniver	WI M	15,1000	7.78	Date Date	<u>01/99</u>	, Time	
3. Relinquished By										~				
э. пошционей ру		1	Date	Time	3. Receive	ed By					Date		Time	
Comments	<u> </u>													
Comments	٠.												1	
· ·														

Chain or Custody Record



OUA-4124 Client			18													
Tetra Tech IVUS, Address BOO Oak Rickye Tur. City Oak Rickye Tur. Project Name	Inc.		Project Manage Telephone Num 12 Site Contact	Lew M		h	1. Car	- 16. H	Date		.~	7	hain Ol	Custoo	y Numbe	er
Address Ti			Telephone Num	ber (Area Code	Fax Mumbe	77'	ice can	THE !!	/O/ Lab Number	0	127			<u>.</u>	5	81
City Dak 140/42 147	mpile		42	3-483	3-99	00			Lab Numbei	•		. }		,		
Oak Violea TU	Zip Code	M	Site Contact	Clia	. 2				L	_		P	ege		of _	/
Project Name	1 3/03	$\overline{\mathcal{L}}$	_	30 P C	DOM	M				\vdash	- 1 -	1 1	— Ani	alysis		
NTC Orlando- Bldg 22 Contract/Purchase Order/Quote No.	フヲ		Carrier/Waybill J	Number'							\preceq	1				
Contract/Purchase Order/Quote No.	/		re	a Ex	_8/48	2	29/68	99		3968	9		-			
				•			1			8	\mathfrak{A}					
Sample I.D. No. and Description	5.		 	Total	Cantain						4				11	
	Date	Time	Sample Type	Total Volume	Contain Type	ers No.	Preservative	Condition	on Receipt	8	HHO			1 1	11	-
U22736 DW07/0	10/2/99	1105	water	120ML	VOA	NO.	LHC	ļ		Ü	4					
12273 G DW05/0	1	1150		120MT	VOA	3	HCL	 		3	\perp	\bot				
1305/0 DW05/0		1510					HCL/NON	 		3	_ _	_				
2273 000/10	<u>\</u>	1525	V	3/120ML	IMA/AMA	<i>3</i> /≥	HE / NONE	 			3		'	 	$\perp \downarrow$	
A NA293 TBOZ				7	J Auto	7	my just	 		3	3			-	+ +	
Temp Blank		 		40ML	VOA					\dashv		+				$\dashv \dashv$
1917 Bear		L	 									-	+		+	
										_	╅				+-+	-+
										十	1-1		+		┼╌┼╌	
													11		 -	+-+
													77		<u> </u>	1-1
										_ _						1-1
						\dashv				•	4-4					11
						\dashv				4			$\downarrow \downarrow \downarrow$			
ecial Instructions						-+					-					
					— L	L	L					_Ļ_		L_	<u> </u>	$\perp \perp$
ssible Hazard Identification																
Non-Hazard Flammable Skin Iri	ritant 🗀	Poison B	Unkn		Sample Dis	•										
Around Time Required			C Level	nown	Retu	m To (Client	Disposal	By Lab		Archive	For		Mon	he	
Normal Rush	•	1	<u> </u>	□ <i>m</i> .	Project Spe	ecitic (S	specify) /	,								
Relinquished By				Time	1. Received	1 Rv									•	
delinquished By			10/4/99	1600	L	Z/	EV						ate		Time	15
omiquisited by	-	D	Paté	Time	2. Received	<i>EU</i> I By	4						10/4	199	\perp \prime	13
elinquished By						•						ا	afe 7		Time	
,		I D	ate	Time	3. Received	Ву						_ـــ				
			1									റ	ate		Time	

Chain of Custody Record



QUA-4124 Client								•	*							
TETVATECL NUS IN	VC.		Project Manager	(An	Pbel			····	Date 0417	70	0	<u> </u>	Chain	Of Custoo	y Numb	5613:
TETVATECL NUS IN Address BW OAK RINGE TWN, PIKE City OAK RINGE Project Name	STE!	16a	Telephone Numb	ber (Area Code 33 – <i>9</i> 70)/Fax Number	(5)	483- Z	014	Lab Number			ربر.		2		2
OAK RIDSE TO	3783	0	Sile Contact											nalysis		
Project Name			Carrier/Waybill N	lumber			· · · · · · · ·			15	2	50				
MC or Can Do 74:	5/		FEDEX	815.	2762	31	5396	<u>_</u>		20	14	2000	3			
Contract/Purchase Order/Quote No.										8	754	<u>-∆</u>	22			
Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containe Type	ers No.	Preservative	Condition	on Receipt	28210	TrAC	14.7	1200			
NTC 086 021 14	04/600	1225	GW	300ML	PANJE	3	10/3/100			V	->4		12			
N22736 DW 0911	041700	1440	4	120ML	youl was	3	1 HCL		·		X	<u> </u>			+	
	ļ	ļ									-	-	11		\dashv	
	 			 											_	
		ļ. —		 		 .										
		 -		 		—-						_	$\perp \perp$			
	<u> </u>	 -									-	-	44		-	
		 		1	 						\dashv		++			
				;						-+	+	- -			++	\dashv
	<u>``</u>									+						
											_	_ _	- -		++	++-
													\top	 -	++	
															1-1	
	 									_	[.					
Special Instructions	<u></u>											L_				
De the Li																
Possible Hazard Identification					Sample Di	sposa	<i>i</i>									
☐ Non-Hazard ☐ Flammable ☐ Skin Turn Around Time Required	Irritant	Poison B		nown	Ret			Dispose	ll By Lab	. [Arc	hive F	or	Mo.	nths	
Normal Bush		'	QC Level		Project Sp	ecific ((Specify)									
1. Relinguished By	-			. III.	1 Pagaina	- n										
12/10			041700	1730	1. Receive		EX						Date		Time)
2. Relinquismed By			0-4-	Time	2. Receive		EX							1170		
						-,							Date		Time	,
3. Relinquished By		<i>I</i>	Date	Time	3. Receive	д Ву							Date		Time	
Comments															'""	
				·- 		~									L	
DISTRIBUTION: E - Stays with Sample; CANARY	/ - Returned to C	lient with I	Report; PINK - Fiel	ld Copy					,							

Chain of Custody Record



ADDITION TETRATECH ADDITION TO CONTROL (AND CONTROL (AND CONTROL AND CONTROL AND CONTROL (AND CONTROL AND CONTROL AND CONTROL AND CONTROL (AND CONTROL AND CONTRO	DUA-4124																
ACONSTRUCTION OF THE POWER OF THE CONTROL CONT	Client			Project Manage	,				Da	ite •				Chelo	Of Cuel	och Muse	
ORD DAK NIDGE URNOTH State of Lock State Control of Lock State Control of Lock State Control of Lock State Control of Lock State Control of Lock State Control of Lock State Control of Lock State Control of Lock State Control of Lock State Control of Lock State Control of Lock State Control of Lock State Control of Lock State Control of Lock State	Address ETRA ECH			<u> </u>	ICHAEL	- CAM	PBE	الما		41.	٦1	ΔN		CHARIT	Ji Cusii	ouy Num	<u>Έ</u> Λ11
NTC OFLAND D Carrier/Mayoff Namber FED. EX. 8808[337] 857] Sample I.D. No. and Description Date Time Sample Type Total Volume Type No. N12273G**DNJ09182 612 50 11:20 6RD 120 m. 1. N12273G**DNJ09182 612 50 120 m. 1. N12273G**DNJ09182 612 6RD 120 m. 1. N12273G**DNJ09182 6RD 12	Son Day lines To								La	b Number	4	- 0		 -			<u> </u>
NTC OFLAND D Carrier/Mayoff Namber FED. EX. 8808[337] 857] Sample I.D. No. and Description Date Time Sample Type Total Volume Type No. N12273G**DNJ09182 612 50 11:20 6RD 120 m. 1. N12273G**DNJ09182 612 50 120 m. 1. N12273G**DNJ09182 612 6RD 120 m. 1. N12273G**DNJ09182 6RD 12	City State	NPIKE		1866	5) 220 -	4714								Page	į	o	, (
NTC OFLAND D Carrier/Mayoff Namber FED. EX. 8808[337] 857] Sample I.D. No. and Description Date Time Sample Type Total Volume Type No. N12273G**DNJ09182 612 50 11:20 6RD 120 m. 1. N12273G**DNJ09182 612 50 120 m. 1. N12273G**DNJ09182 612 6RD 120 m. 1. N12273G**DNJ09182 6RD 12	DAK RIDE TH	2000		She Contact	RY R	1060									nalysi		
ContractPrinchase Order/Octor No. Sample LD. No. and Description Date Time Sample Type Volume Type No. N 22*T3G*DWORK 6 2 40 11:20 650 120 ml. 3. HCL N 22*T3G*DWORK 6 2 40 11:20 650 120 ml. 3. HCL N 22*T3G*DWORK 6 2 40 11:20 650 120 ml. 3. HCL N 22*T3G*DWORK 6 2 40 11:20 650 120 ml. 3. HCL N 22*T3G*DWORK 6 2 40 11:20 650 120 ml. 3. HCL N 22*T3G*DWORK 6 2 40 11:20 650 120 ml. 3. HCL N 22*T3G*DWORK 6 2 40 11:20 650 120 ml. 3. HCL N 22*T3G*DWORK 6 2 40 11:20 650 120 ml. 3. HCL N 22*T3G*DWORK 6 2 40 11:20 650 120 ml. 3. HCL N 22*T3G*DWORK 6 2 40 11:20 650 120 ml. 3. HCL N 24*T3G*DWORK 6 2 40 11:20 ml. 3. HCL N 25*T3G*DWORK 6 2 4	rioject Name	- 		Carrier/Waybill N	lumber	D' CHT	5 M	-			П	T	T	T			
Sample I.D. No. and Description Date Time Sample Type Total Volume Type No. HCL N. 22.T3 GTWO 9 W. L(2 So. 11:30 Gst) L(2 So. 11:30 Gst) L(2 So. 11:30 Gst) L(2 So. 11:30 Gst) L(2 So. 11:30 Gst) L(2 So. 11:30 Gst) L(2 So. 11:30 Gst) L(2 So. 11:30 Gst) L(2 So. 11:30 Gst) L(2 So. 11:30 Gst) L(2 So. 11:30 Gst) L(2 So. 11:30 Gst) L(2 So. 11:30 Gst) L(2 So. 11:30 Gst) L(2 So. 11:30 Gst) L(2 So. 11:30 Gst) L(2 So. 11:30 Gst) L(2 So. 11:30 Gst) L(2 So. 11:30 Gst) L(3	NIC OKLANDO					28081:	2011	1000			1 1	- }					
N 22 T3 G T) LO P S LI S LI S C S LI S LI	Contract/Purchase Order/Quote No.			1	-/· ·	35.5	70.7	102 1					ľ				
N 22 T3 G T) LO P S LI S LI S C S LI S LI											N	- [i	1 1	1 1		
N 22 T3 G T) Log 162	Sample I.D. No. and Description	Date	Time	Sample Type		Contail	ners		T		121		1	1	11		
pocial Instructions Sample Disposal Disposal By Lab Archive For Months	11227260110012				 	Турв	No.	<u></u>	Condition on	Receipt							
Ossible Hazard Identification Non-Hazard Flammable Skin Irritant Poison B Unknown Return To Client Disposal By Lab Archive For Months OCLEVEL Project Specific (Specify) Relinquished By Date Time 2. Refered By Date Time Co-3 color Time N AX 139 DWO T 16C	16/2/50	11:30	GEN	120ml.	404	3	HCL				_	1	 	++		 - - -	
Ossible Hazard Identification Non-Hazard Flammable Skin Irritant Poison B Unknown Return To Client Disposal By Lab Archive For Months OCLEVEL Project Specific (Specify) Relinquished By Date Time 2. Refered By Date Time Co-3 color Time	<u> </u>	 	 		ļ	-								1		 	
Ossible Hazard Identification Non-Hazard Flammable Skin Irritant Poison B Unknown Return To Client Disposal By Lab Archive For Months OCLEVEL Project Specific (Specify) Relinquished By Date Time 2. Refered By Date Time Co-3 color Time		 	 	ļ — — — — — — — — — — — — — — — — — — —		-	ļ	·			\bot						
Ossible Hazard Identification Non-Hazard Flammable Skin Irritant Poison B Unknown Return To Client Disposal By Lab Archive For Months OCLEVEL Project Specific (Specify) Relinquished By Date Time 2. Refered By Date Time Co-3 color Time					 -	 	ļ	 			-						
Ossible Hazard Identification Non-Hazard Flammable Skin Irritant Poison B Unknown Return To Client Disposal By Lab Archive For Months OCLEVEL Project Specific (Specify) Relinquished By Date Time 2. Refered By Date Time Co-3 color Time						 		 		-		- -	╁╌╁╸				
Ossible Hazard Identification Non-Hazard Flammable Skin Irritant Poison B Unknown Return To Client Disposal By Lab Archive For Months OCLEVEL Project Specific (Specify) Relinquished By Date Time 2. Refered By Date Time Co-3 color Time	ļ <u></u>	ļ				†		† 		-	+	- -	╂╌╂╌	╼╁╾┼			
Ossible Hazard Identification Non-Hazard Flammable Skin Irritant Poison B Unknown Return To Client Disposal By Lab Archive For Months OCLEVEL Project Specific (Specify) Relinquished By Date Time 2. Refered By Date Time Co-3 color Time	 	 _									+		╁╌┼╌			 - 	
Ossible Hazard Identification Non-Hazard Flammable Skin Irritant Poison B Unknown Return To Client Disposal By Lab Archive For Months OCLEVEL Project Specific (Specify) Relinquished By Date Time 2. Refered By Date Time Co-3 color Time										7	-	+	 - -	╅╾╁		 	
Ossible Hazard Identification Non-Hazard Flammable Skin Irritant Poison B Unknown Return To Client Disposal By Lab Archive For Months OCLEVEL Project Specific (Specify) Relinquished By Date Time 2. Refered By Date Time Co-3 color Time	 	-				ļ					十	1	 	++	$\dashv\dashv$		
Ossible Hazard Identification Non-Hazard Flammable Skin Irritant Poison B Unknown Return To Client Disposal By Lab Archive For Months OCLEVEL Project Specific (Specify) Relinquished By Date Time 2. Refered By Date Time Co-3 color Time	ļ ————													1		_+-	
Ossible Hazard Identification Non-Hazard Flammable Skin Irritant Poison B Unknown Return To Client Disposal By Lab Archive For Months OCLEVEL Project Specific (Specify) Relinquished By Date Time 2. Refered By Date Time Co-3 color Time								ļ		_	\perp						
Ossible Hazard Identification Non-Hazard Flammable Skin Irritant Poison B Unknown Return To Client Disposal By Lab Archive For Months OCLEVEL Project Specific (Specify) Relinquished By Date Time 2. Refered By Date Time Co-3 color Time						1		 		-	+		<u> </u>	\bot			
Ossible Hazard Identification Non-Hazard Flammable Skin Irritant Poison B Unknown Return To Client Disposal By Lab Archive For Months OCLEVEL Project Specific (Specify) Relinquished By Date Time 2. Refered By Date Time Co-3 color Time						†				-	-	-		-	-1-1		
Sample Disposal Unknown Sample Disposal Return To Client Disposal By Lab Archive For	Special Instructions	<u> </u>									\dashv	+	-	 	+		
Sample Disposal Unknown Sample Disposal Return To Client Disposal By Lab Archive For												Щ_	اـــــــــــــــــــــــــــــــــــــ	<u></u>			
Norn-Hazard	Possible Hazard Identification					10											
OC Level Project Specific (Specify) Proje	Non-Hazard Flammable Skin	Irritant	Poison B	Links	LOMM	1											
Relinquished By Date Time 1. Received By Date Time 2. Received By Date Time 3. Received By Date Time 3. Received By Date Time 3. Received By Date Time 3. Received By Date Time 3. Received By	Turn Around Time Required					Prolect S	tum To pacific (Client Specify)	Disposal By	Lab		Arch	ive For		M	onths	
Pate Time 1. Received By Date Time 2. Received By Date Time Date Time Co-3 To 10! Time Date Time Co-3 To 10! Time Date Time Co-3 To 10! Time Date Time Comments		JURNARO	CHIN	□ L □ n.	□ m.	,	, ,,,,,,	opcuiy)									
Relinquished By Date Time Z. Refelved By Date Time Date Time Date Time Date Time Date Time Date Time Date Time Date Time Date Time Date Time Date Time Date Date Date Time Date	(xon)		10	Date		1. Flective	ed By		• 1 1								
Relinquished By Date Time 3. Received By Date Time 5. Time 7	2. Relinquished By			6/2/00	12:30	1/1	1	niast	rller	ノ			٠		27		
Relinquished By Date Time 3. Received By Date Time 5. Online 5.	0 0		1	Date t	Time	Z. Refein	ed By	7/									7:00 A
Omments Date Time	3. Relinquished By)ate	Time	/		V								'""	້ ເັ
S. Marian S. Mar			ا		· m i Ref	3. Hecelvi	эт Ву							Date		Tim	e ,5
STRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy	Comments			<u>-</u>													7
*THIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy																	S
	THIBUTION: WHITE - Stays with Sample; CANARY	Y - Returned to Cl	ient with F	Report; PINK - Field	d Copy												

Chain ot Custody Record



STL-4124 (0700)								SE	RVICES	S	evern	Trer	nt Labora	atories	s, Inc.
Tetra Tich NUS	Project	Manager	(10:	mple	, e (<u> </u>		T	11 3	00	Ü	Chain of Custody		
800 Oak Ridge Turple 11 W	CC Telephi	one Numbe	er (Area Co	nde)/Fax No	umber /	865	118	 3-70		ab Numbe					1
Ouk Riduic State Zip Code	Site Co	ntact		Lab Cor	ntact	tib	T		Analys	sis (Attac pace is n	h list if eeded)		Page	of	
Project Name and Location (State)	Carrier	Waybill Nu	mber)	114	15/10	170	M								
Contract/Purchase Order/Quote No.			atrix		Containers Preservativ	8 &	YOU	7) V	PH				Specia Condition	al Instructi ons of Re	ons/ ceipt
Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date Time	Air	Soil	Unpres. H2SO4	HNOS	ZnAc/ NaOH	12/	アゴス	R						
N2273TB12-0100 1113	20000000	Ì	3) (3)		T T	2 10.2	X				-	++-	TCLVO	on's	562/0
N227313 13	1500	<u> </u>		22	3		X	XX	X				PAHS	LCP	5310.
N22736MW 04 13 N22736MW 08 13	1600	 	+	22	3		X	/	X			- - -	TRPH	IL-	PRO
Naans (MW09 13	11/15	X			3	++-	Ϋ́		7		\dashv		 	 -	
N2273 6DW0513	1420	X		3	3		X	X				++			
N22736DW0413	1211	<u> </u>		3	3	11-	X	X							
NaanaGDW0713	1216		++-		3	+	X				\dashv		-		
N22736DW0813(ms/msp)	1615	X		91	9	1 -	X	X			+	+	 		
Naa136DWO913	1046	<u> X </u>	<u> </u>		3		X								
Possible Hazard Identification		Sample	•												
Non-Hazard	·	Retu	m To Clier		isposal By L Requiremen			For _		Months	(A lee may longer tha	be asses n 3 month	sed if samples ar s)	e retained	
24 Hours 48 Hours 7 Days 14 Days 1. Ralinguished By	21 Days Othe		Time	 	eceived By				· · · · ·						·,
2. Relinquished By			Time		eceived By				-				Date	Time	
3. Relinquished By	Date		ime								·		Date	Time	
Comments	Date			3. Re	eceived By								Date	Time	
·															

APPENDIX H GROUNDWATER ANALYTICAL RESULTS

GROUNDWATER ANALYTICAL RESULTS OBTAINED BY ABB-ES



MAIN BASE, NTC OPLANDO, FLORIDA

La	b Sample Number Site Site Locator Collect Date:	0.0 0.091. 5	20066 4 273 3301/DW3 DEC 96 J. UNITS	VALUE	0.060 15-7	1200) 273 GC101 AUG 95 B UNITS	VALUE	00 <i>6</i> 15 -	32002 273 GC201 AUG-95 M, UNITS	VALUE	2: 0060 15-2	32001 273 3C301 AUG-95 L UNITS
EDB	ug/1											
Ethylene dibromide		.02 U	ug/1	. 02	s u	ug/1	. 02	U	ug/l		02 U	ug/l
EPA 601/602	ug/l											
Chloromethane	, , , , , , , , , , , , , , , , , , ,	1 0	uq/1	1	T.	uq/1	1	บ	ug/l		1 U	ug/1
Bromomethane		1 17	ug/l		Ū	uq/1		Ü	ug/l		1 U	ug/l
Dichlorodifluoromethan	۵	1 U	ug/1		ιÜ	ug/1		U	ug/l		1 U	
Vinyl chloride		1 U	ug/1		U	ug/l		Ü	ug/1			ug/1
Chloroethane		1 ()	ug/1		LU	ug/l		U	-		1 U	ug/l
Methylene chloride		i Ü				**			ug/l		1 U	ug/l
Trichlorofluoromethane		1 U	ug/1		5 U	ug/1		U	ug/l		5 U	ug/l
1.1 Dichloroethene			ug/1		l U	ug/l	-	U	ug/l		1 U	ug/l
,		1 U	ug/l		U	ug/1		U	ug/l		1 U	ug/l
1,1-Dichloroethane		1 (1	ug/l		U	ug/1		1)	ug/1		1 U	ug/l
trans 1,2-Dichloroethe	ne	1 11	ug/1		וזן	uq/1	1	U	ug/1		1 U	ug/1
Chloroform		5.4	ug/l	I	U	ug/1	1	ŧ)	ug/1		1 U	ug/l
1,2-Dichloroethane		1 U	ng/1	1	U	ug/1	1	ŧt	ug/I		1 U	uq/l
1,1,1-Trichloroethane		1 U	ug/1	1	1 ()	ug/1	1	U	uq/1		1 U	ug/l
Carbon tetrachloride		1 U	ug/l	1	IJ	ug/l	1	IJ	ug/1		1. U	ug/l
Bromodichloromethane		1 U	11g/1	1	ιυ	uq/l	1	U	ug/l		1 U	ug/l
1,2-Dichloropropane		1 U	uq/l	1	ιυ	ug/l		tı	ug/1		1 U	ug/1
cis-1,3-Dichloropropen	e	1 U	uq/1		ιυ	ug/l	-	บ	ug/l		1 U	ug/1
Trichloroethene		1 U	uq/l		U	ug/l		ับ	ug/l		1 U	ug/1
Dibromochloromet hane		î Ü	uq/l		ιÜ	ug/l	_	ับ	ug/1		1 U	
1,1,2-Trichloroethane		1 0	ug/1		LU	ug/l		ับ				ug/l
trans-1,3-Dichloroprop	ane	1 U	ug/l		LU		-	-	ug/1		1 U	ug/l
Bromoform	erite.	1 0	ug/1			ug/l		. 11	ug/1		1 U	ug/l
1,1,2,2-Tetrachloroeth					U	ug/l		U	ug/l		1 U	ug/l
	ane	1 U	ug/l		1 1)	ug/l		U	ug/1		1 U	ug/l
Tetrachloroethene		1 U	ug/l		U	ug/1		U	ug/l		1 U	ug/l
Chlorobenzene		2	ug/1		U	ug/l		U	ug/l		1 U	ug/]
1,3-Dichlorobenzene		1 U	ug/l	-	U	ug/l	1	U	ug/1		1 U	ug/l
1,2-Dichlorobenzene		110	ug/1		U	ug/1	1	U	ug/l		1 U	ug/l
1,4-Dichlorobenzene		4.9	ug/l	1	LU	ug/1	1	11	ug/l		1 U	uq/l
Methyl tert-butyl ethe	r	5 U	ug/1	1	U	ug/l	1	U	ug/l		1 U	ug/l
Benzene		1 U	u g/]	1	LÜ	ug/l	1	U	ug/1		1 U	ug/1
Toluene		1 U	ug/l	1	LU	ug/1	1	IJ	uq/1		1 U	ug/l
Chlorobenzene		2	ug/l	1	U	ug/l		U	uq/l		1 U	ug/1
Ethy1benzene		1 0	ug/1	1	U	ug/1		U	uq/1		1 U	ug/1
Xylenes (total)			ug/1		U	ug/1		Ü	ug/l		1 U	ug/1 ug/1
o-Xylene		1 U	ug/l			ug/l	•	.,	ug/1		-	
m,p-Xylene		1 0	ug/l	_		ug/1 ug/1	- -		ug/l		-	ug/l
Bromobenzene		1 U	ug/1	-		ug/1 ug/1	-				-	ug/l
1,1,1,2-Tetrachloroetha	ane	1 0	ug/l			ug/l	-		ug/l		-	ug/l
1,2,3-Trichloropropane		1 U	ug/1 ug/1	-		ug/1 ug/1	-		ug/l		-	ug/l
• •		. 0	~g, 4	_		39/1	-		ug/l			ug/l
LEAD	ug/l											
Lead		15	ug/l	19.5		ug/1	2.7		ug/1		2 U	ug/l
PNA COMPDS	ug/]											
Naphthalene	*	- 5 U	ug/l	2	: U	uq/I	າ	U	ug/1		2 U	ug/l
2-Methylnaphthalene		5 U	ug/1		. Ü	uq/1		U	ug/1		2 0	
1-Methylnaphthalene		5 U	ug/l		. U	ug/l		U	•			ug/1
		. , 0	49/1	2	U	ug/ i	2.	U	ug/1		2 U	ug/1

(d)

07/29/97 BUILD 2273 07:16:00 MAIN BASE, NTC ORLANDO, FLORIDA

Lab Sample Number: Site Locator Collect Date: V	0.9 DE	73 D1/DW3	VALUE	2: 0060 15-7	32004 273 3C104 MIG-95 L-UNITS	VAL-UE	00	3232002 2273 06GC201 5-AUG-95 UAL UNITS	VALUE	2 006 15-	232003 2273 5GC301 -AUG-95 AL UNITS	
Acenaphthylene	5 U	ug/l	;	S ft	ug/l		2 U	ug/l		2 U	ug/l	
Acenaphthene	5 U	ug/l		2 U	ug/1		2 U	ug/l		2 U	ug/1	
Fluorene	5 U	ug/l		2 U	uq/1		2 U	ug/1		2 U	ug/l	
Phenanthrene	5 U	ug/1	:	2 U	ug/l		3 17	ug/1		2 U	_	
Anthracene	5 0	ug/l	:	2 U	ug/1		3 U	ug/1		2 U	ug/1	
Fluoranthene	5 U	ug/1	:	2 U	ug/1		2 U	ug/1		2 U	ug/1	
Pyrene	5 U	uq/l	:	S O	uq/l		2 0			2 U	ug/l	
Benzo (a) anthracene	5 U	ug/l	;	s ti	ug/1		2 U	ug/l		2 U	ug/1	
Chrysene	5 U	uq/1	;	s u	uq/1		2 U	ug/l		2 U	ug/1	
Benzo (b) fluoranthene	5 U	ug/1		ยบ	ug/l	1	2 U	ug/1			ug/l	
Benzo (k) fluoranthene	5 U	uq/1		5 (1	uq/1		2 0	ug/1		2 U	ug/l	
Benzo (a) pyrene	5 ()	ug/1		2 11	ug/l		2 0	uq/1		2 U	ug/l	
Indeno (1,2,3-cd) pyrene	5 IJ	uq/1		3 11	ug/l		2 0	uq/l		2 U	ug/l	
Dibenzo (a,h) anthracene	5.0	ng/1		5 IJ	uq/1		2 0			2 U	ug/l	
Benzo (g,h,i) perylene	5 (1)	ng/1		2 ()	ug/1		2 0			2 U 2 U	ug/l ug/l	
TOTAL PETROLEUM HYDROCARBON mg/l												
Total petroleum hydrocarbon	1 U	mg/1	1	U	mq/l		1 U	mq/l		1 U	ma/1	

07/29/97 BUILL 2273 07:16:00 MAIN BASE, NTC ORLANDO, FLORIDA

Lab	Sample Number: Site Locator Collect Date:		G8232004 2273 006GC401 15: AUG: 95 QUAL: UNITS	VALUE	G8232004RE 2273 006GC401RE 15-AUG 95 QUAL UNITS	2: იი ა ცე ი 01 - c	0017-4 273 1/2273DW1 DCT-96 5 UNITS	VALUE	2 006GD 02-	0005-1 273 1002/DW-1 JAN-97 L UNITS
EDB	uq/l			·						
Ethylene dibromide		.02	U ug/l		· ug/l	.02 U	บๆ/1		-	uq/l
EPA 601/602	ug/1						-			-3/ .
Chloromethane	,,	j 1	Ս ագ/1		/ >					
Bromomethane		1 1			- ug/1	5 U	ug/l		1 U	ug/l
Dichlorodifluoromethane		1 1			ug/l	5 tr	u g/1		1 U	ug/l
Vinyl chloride		1 1			· ug/l	' 5 U	ug/1		1 U	ug/l
Chloroethane		1 (- ug/1	5 U	ug/l		1 U	ug/l
Methylene chloride		5 (· ug/1	5 U	ug/1		ı u	ug/l
Trichlorofluoromethane		1 (,, -		ug/1	5 บ	ug/1		1 U	ug/l
1,1-Dichloroethene		1 1	., -		- ug/1	5 U	ug/l		1 U	ug/l
1,1-Dichloroethane		1 (31.		- uq/1	5 U	ug/1		1 U	ug/l
trans-1,2-Dichloroethene	2	1. (37		ug/1	5 U	u g /1		1 U	ug/l
Chloroform	*	1 (.,, -		- ug/1	5 U	ug/1		1. U	ug/l
1,2-Dichloroethane		1 (21/		- ug/l	5 ប	ug/l		1 U	ug/l
1,1,1-Trichloroethane		1 (ug/l	5 U	ug/l		1 U	u g /1
Carbon tetrachloride		1 (J		- ug/1	5 U	ug/1		1 U	ug/l
Bromodichloromethane		1 (3, -		ug/1	5 U	ug/l		1 U	ug/l
1,2-Dichloropropane		1 (- ug/l	5 0	ug/1		1 U	ug/l
cis-1,3-Dichloropropene		1 (3,		- ug/1	5 U	ug/l		1 U	ug/l
Trichloroethene		1 (- ug/1	5 U	ug/l		1 U	ug/l
Dibromochloromethane		1 (- 31		- ug/1	5 U	ug/l		1 U	ug/l
1,1,2-Trichloroethane		1 (3, -		· ug/1	5 U	ug/l		1 U	ug/l
trans-1,3-Dichloroproper	10	1 1			· ug/1	5 11	ug/1		រប	ug/1
Bromoform		1 [- uq/1	5 11	ug/1	:	1 U	ug/l
1,1,2,2-Tetrachloroethar	ne	1 t			uq/1	5 11	ug/I		1 U	ug/]
Tetrachloroethene	14,	1 (,,		- ug/1	5 U	ug/l	:	เบ	ug/l
Chlorobenzene		1 (37 -		· ug/1	5 ti	ug/1		1 U	ug/l
1,3-Dichlorobenzene		1 (37		- ug/1	5 0	ug/l	:	1 U	ug/l
1,2-Dichlorobenzene		1 1	3/ -		- ug/l	5 U	ug/l	1	U	ug/l
1,4-Dichlorobenzene		1 t			· ug/1	5 11	ug/1	j	ιυ	ug/l
Methyl tert-butyl ether		1 0			- ug/1	5 U	ug/}		U	ug/l
Benzene		1 0	. 31		- ug/l	25 1)	ug/1	ţ	5 U	ug/l
Toluene		1 0	- 3/ -		- ug/l	5 U	ug/1	1	ιυ	ug/l
Chlorobenzene		1 U	-3, -		- ug/l	5 U	ug/l	1	LU	ug/l
Ethylbenzene		1 (- 31 -		- ug/1	5 tr	ug/1	1	U	ug/l
Xylenes (total)		1 U	J' -		• ug/l	236.5	ug/l	11.8	1	ug/l
o-Xylene		-	ug/1 ug/1		- tig/1		ug/1	-		ug/l
m, p-Xylene		=	ug/1 ug/1		- ug/1	314.5	ug/l	36.1		ug/l
Bromobenzene		_	ug/1 ug/1		- ug/1	835	ug/l	74.7		ug/l
		-	ug/I	-	- ug/1	5 ប	ug/l	1	U	ug/l

07/29/97 BUILD 2273 07:16:00 MAIN BASE, NTC OPLANDO, FLORIDA

							· · · · · · · · · · · · · · · · · · ·						
Lab	Sample Number: Site Locator Collect Date:	VALUE	G8232004 2273 006GC401 15-AUG-95 QUAL UNIT		VALUE	2 006G 15-	2004RE 273 C401RE AUG-95 J. UNITS	VALUE	2 006GD10 - 01	0017-4 273 1/2273DW1 OCT-96 LUNITS	VALUE	2 006GD 02-	0005-1 273 0102/DW-1 JAN-97 %L UNITS
1,1,1,2-Tetrachloroetha 1,2,3-Trichloropropane	ne		- ug/ - ug/			-	ug/l ug/l		5 บ 5 บ	ug/l ug/l		1 U	ug/l
			~ 3,	•			ug/ r		5 U	ug/1		1 U	ug/l
LEAD	ug/1												
Lead		4.1	ug/	1			ug/1		3 U	ug/1		_	ug/l
BUL COMPAR										-3, -			ug/ 1
PNA COMPDS	ug/1												
Naphthalene			!U ug/			$2 \cdot 0$	ug/1		5 U	uq/l		_	ug/l
2-Methylnaphthalene			! !! ug/	1		$S = \Omega$	ug/1		5 13	ug/l		_	ug/l
1-Methylnaphthalene			! U ug/	1		2 17	ug/1	T	5 0	ug/1		_	ug/l
Acenapht hylene			!U ug/	1		2 U	ug/T		5 1)	ug/1		_	ug/l
Acenaphthene		2	!Մ ug/	1		2 U	ug/l		5 U	uq/1		_	ug/l
Fluorene		2	! U - ug/	1.		2 U	ug/l		5 U	ug/l		-	ug/l
Phenanthrene		2	! U - ug/	1		2 U	ug/l		5 U	uq/l	`	_	ug/l
Anthracene		2.	:U ug/	1		2 U	uq/l		5 U	ug/1		_	ug/l
Fluoranthene		2	: U ug/	1		2 U	uq/1		5 U	ug/l		_	ug/l
Pyrene		2	! U ug/	1		2 U	uq/1		5 U	tig/1		_	ug/l
Benzo (a) anthracene		2	: U ug/	1		2 U	uq/l		5 U	uq/1		_	ug/1
Chrysene		2	U ug/	1		2 U	uq/1		5 U	uq/1			ug/1 ug/1
Benzo (b) fluoranthene		2	U ug/	1		2 U	uq/1		5 Ü	ug/1			ug/1 ug/1
Benzo (k) fluoranthene		2	U uq/	1		2 U	uq/l		5 U	ug/l	•	-	_
Benzo (a) pyrene		2	:tf ug/	1		2 U	uq/1		5 U	ug/1		-	ug/1
Indeno (1,2,3-cd) pyrene	•	2	t ug/			2 U	ug/1		5 U	ug/l		_	ug/l
Dibenzo (a,h) anthracene	•	2	.υ ug/			2 U	ug/1		5 U	ug/l			ug/1
Benzo (g,h,i) perylene		2	U ug/			2 U	ug/l		5 U	ug/l		-	ug/l ug/l
TOTAL PETROLEUM HYDROCARBO)N mg/l									•			3, -
Total petroleum hydrocai		1	U mg/	ι			mg/l		1.0	mg/l	•	-	mq/1

mg/1

07/29/97 BUILE 2273 07:16:00 MAIN BASE, NTC ORLANDO, FLORIDA

Lab Sample Number:

Site

VALUE

Collect Date:

27060163 2 2273 006GD103/2273 DW 1 24 JUN 97

QUAL UNITS

96120066-3 2273 006GD201/DW2 09 DEC 96 VALUE OUAL UNITS

97010005 2 2273 006GD202/DM-2 02.JAN-97 OUAL UNITS

VALUE

97060163-3 2273 006GD203/2273 DW-2 24-JUN-97 VALUE OUAL UNITS

EDB uq/1Ethylene dibromide 02 U uq/102 11 uq/1uq/1.02 U uq/1EPA 601/602 nq/1Chloromethane 1 U uq/11 11 $\eta q/1$ 1 11 uq/11 U ug/1Bromomethane 1 (1 119/1 1 U nq/13 11 ng/1Dichlorodifluoromethane 1 U ug/l 1 U nq/11 U uq/11 () ug/1 Vinyl chloride 1 U uq/l 1 11 ug/11 0 uq/11 [[uq/11 U Chloroethane ug/1 1 U ug/11 U $\upsilon \mathbf{q}/1$ ŧ O uq/11 U Methylene chloride uq/11 U ug/11 0 ug/11 U uq/11 U uq/1Trichlorofluoromethane 1 U ug/1 1 U ug/l 1 U ug/1 1,1-Dichloroethene 1 U ug/1 1 U uq/1 1 U uq/11 1) ug/11,1-Dichloroethane 1 U uq/l 1 U uq/11 U ug/1 LU ug/11 U trans-1,2-Dichloroethene ug/l 1 U uq/11 0 ug/l 1 U ug/1 1 U Chloroform ug/l ug/11 0 1.0 ug/l 3 U uq/11 U 1,2 Dichloroethane ug/l 1 U ug/l 1 13 uq/11 U uq/11 U 1,1,1-Trichloroethane ug/l 1 U ug/11 U ug/11 U uq/1 1 U Carbon tetrachloride uq/11 () ug/1 1 U ug/1 1 11 ug/1Bromodichloromethane 1 U ug/l 1 0 ug/11 U uq/11 U uq/1 1,2-Dichloropropane 1 U ug/l 1 U ug/11 11 ug/1 1 U uq/11 U ug/l cis-1,3-Dichloropropene 1 U ug/l 1 U $\eta g/1$ 1 0 ug/1 1 U Trichloroethene ug/l 1 U uq/11 U ug/11 U ug/l 1 U uq/l Dibromochloromethane 1 U uq/11 U ug/] 1 U uq/1 1 U 1,1,2-Trichloroethane ug/1 1 U ug/l 1 U ug/l). U ug/1 trans-1,3-Dichloropropene 1 U ug/1 1 U uq/11 0 uq/1 1 U uq/11 U Bromoform ug/] 1 U ug/11 U uq/11 U tiq/1 1,1,2,2-Tetrachloroethane 1 U ug/1 1 U ug/l 1 U ug/11 U uq/l 1 U ug/l Tetrachloroethene 1 U ug/1 1 U ug/l 1 U uq/l Chlorobenzene 1 U ug/11 U ug/139 ug/112.7 ug/l 29.9 1,3-Dichlorobenzene ug/l 1 U uq/11 U ug/l 1. U ug/l 1 U 1,2-Dichlorobenzene uq/l 1 U ug/l 1 U ug/11 U ug/1 1,4-Dichlorobenzene 1 U ug/11 U uq/11 U uq/l 1 U ug/1 1 U Methyl tert-butyl ether ug/l 5 U uq/15 U ug/15 U ug/15 U ug/1Benzene 1 U ug/l 4.8 ug/1 1 U ug/l 3.3 Toluene uq/11 U ug/11 U uq/11 U uq/1Chlorobenzene 1 U ug/l 1 U ug/l 39 ug/112.7 uq/1Ethylbenzene 29.9 ug/15.4 ug/1 7 ug/1ug/l 2.1 Xylenes (total) 4 ug/l ug/1ug/1 ug/1 o-Xylene ug/1130 uq/l 8.6 ug/13.5 uq/l 17.2 m,p-Xylene ug/l 120 uq/116.3 ug/1ug/l 28.8 Bromobenzene ug/11 U ug/11 U ug/11 U ug/1 1 U uq/l

07/29/97 BUILDIN 2273 07:16:00 MAIN BASE, NTC OPLANDO, FLORIDA

Lab	Sample Number Site Site Locator Collect Date:	: 006GI 02	10005 4 2273 2302/DW 3 JAN 97 M. UNITS		0163-4 273 /2273 DW-3 JUN-97 L-UNITS	006GD 4 2	060163-5 2273 01/2273 DW-4 4-JUN-97 UAL UNITS	006GD501 24-	50163-6 2273 1/2273 DW-5 -JUN-97 AL UNITS
EDB	ug/l								
Ethylene dibromide	rigy i.	=	uq/l	. 02 U	119/1	02 U	ug/1		
EPA 601/602	ug/l						097 t	.02 U	ug/1
Chloromethane	11971		4.						
Bromomethane		1 U	ug/l	1 U	ug/l	1 U	ug/l	1 U	ug/l
Dichlorodifluoromethane		1 U	ug/1	1 U	ug/l	1 U	ug/l	1 U	ug/l
Vinyl chloride		1 U	ug/l	1 ()	ug/l	່ 1 U	ug/1	1 U	uq/l
Chloroethane		1 ()	ug/1	ŧ u	ug/1	1 U	ug/l	1 U	ug/l
Methylene chloride		1 17	ug/1	1 1)	ug/1	1 0	ug/l	1 U	ug/l
Trichlorofluoromethane		1 1)	uq/l	1 U	uq/l	i U	uq/l	1 U	ug/1
1,1-Dichloroethene		1 U	ug/l	1 (1	ug/1	t U	ug/l	1 U	ug/l
		1 U	ug/l	1 0	ug/l	1 U	ug/1	1 0	ug/l
1,1-Dichloroethane		1 U	ug/1	1 U	uq/]	1 U	uq/1	1 0	uq/l
trans-1,2-Dichloroethene Chloroform		1 U	ug/l	1 U	ug/1	1 U	ug/1	1 U	ug/1
		1 0	uq/1	1 U	ug/1	1 U	uq/1	1 U	ug/1
1,2-Dichloroethane		1 U	ug/1	1 U	uq/1	1.0	uq/1	1 U	ug/1
1,1,1-Trichloroethane		1 U	ug/l	1 U	ug/l	1.0	ug/1	1 U	ug/l
Carbon tetrachloride		1 U	ug/1	1. U	ug/1	ιυ	ug/1	1 U	ug/1 ug/1
Bromodichloromethane		1 U	ug/l	1 U	uq/1	1 U	ug/1	1 U	
1,2-Dichloropropane		1 0	ug/l	1 U	uq/1	1 U	uq/l	1 U	ug/l
cis-1,3-Dichloropropene		1 U	ug/l	1 U	uq/1	1 0	ug/1	1 U	ug/1
Trichloroethene		1 U	ug/1	1 U	ug/l	1 U	ug/1	1 U	ug/1
Dibromochloromethane		1 U	ug/l	1 U	uq/l	1 0	ug/l	1 U	ug/l
1,1,2-Trichloroethane		1 U	ug/l	1 U	uq/l	1 0	ug/1	1 U	ug/l
trans-1,3-Dichloroproper	1e	1 U	ug/1	1 U	ug/1	1 U	ug/1		ug/l
Bromoform		1 U	ug/l	1 U	ug/l	1 0	ug/1	1 U	ug/l
1,1,2,2-Tetrachloroethan	ne.	1 U	ug/l	1 U	uq/1	1 0	ug/1	1 U	ug/l
Tetrachloroethene		1 U	ug/1	1 Ü	ug/l	1 0	ug/1 ug/l	1 U	ug/l
Chlorobenzene		1 U	ug/1	1 U	ug/l	1 0	ug/1	1 U	ug/l
1,3-Dichlorobenzene		1 U	ug/1	1 U	ug/1	1 U	ug/1 ug/1	1 U	ug/l
1,2-Dichlorobenzene		1 U	ug/l	42.8	ug/1	1 0	ug/1 ug/1	1 U	ug/l
1,4-Dichlorobenzene		1 U	uq/l	3 17	ug/l	1 0	*	1 U	ug/l
Methyl tert-butyl ether		5 tJ	uq/l	5 U	uq/l	5 U	ug/1	1 U	ug/l
Benzene		1 U	ug/l	1 0	ug/1	1 0	ug/1	5 U	ug/l
Toluene		1 U	ug/l	1 U	uq/1	1.0	ug/1	1 U	ug/I
Chlorobenzene		1 U	ug/1	1 U	uq/1 uq/1	1 0	ug/1	1 U	ug/l
Ethylbenzene		1 U	ug/1	1 U	ug/1		ug/1	1 U	ug/l
Xylenes (total)			ug/1		ug/1 ug/1	3.7	ug/1	1 U	ug/l
o-Xylene		1 U	ug/1	1 U	ug/1 ug/1		ug/1	-	ug/l
m,p-Xylene		1 0	υ q/1	1 U	ug/1 ug/l	3.9	ug/l	1 U	ug/l
Bromobenzene		1 U	ug/1	1 U	ug/l ug/l	8.1	ug/l	1 U	ug/l
			- 31 -	t U	ud/ i	1 U	ug/l	1 U	ug/l



Lab Sample Number: Site Locator 0.0 Collect Date: VALUE 1,1,1,2-Tetrachloroethane 1,2,3-Trichloropropane LEAD ug/l Lead PNA COMPDS ug/l Naphthalene 2-Methylnaphthalene 1-Methylnaphthalene Acenapht hylene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene Benzo (a) anthracene Chrysene Benzo (b) fluoranthene Benzo (k) fluoranthene Benzo (a) pyrene Indeno (1,2,3-cd) pyrene Dibenzo (a,h) anthracene Benzo (g,h,i) perylene TOTAL PETROLEUM HYDROCARBON mg/1 Total petroleum hydrocarbon

07/29/97 BUILDING 2273 07:16:00 MAIN BASE, NTC ORLANDO, FLORIDA

	7 3		2 D401 - 24	0163-5 273 /2273 DW-4 JUN-97 JUNITS		2: D501; 24-	0163-6 273 /2273 DW-5 JUN-97 L UNITS
1 U 1 U	ug/l ug/l		U U	ug/l ug/l		U U	ug/l ug/l
3 U	ug/l	3	U	ug/l	3	U	ug/l
5 U	ug/l		U	ug/1 ·	8		ug/l
5 U	ug/l		U	ug/l	22		ug/l
5 U	ug/l	5	U	ug/1	16		ug/l
5 U 5 U	ug/1		U	ug/l		U	ug/]
5 U	ug/1 ug/1		U U	ug/1		U	ug/l
5 U	ug/1 ug/1		U	ug/1 ug/1		U	ug/1
5 U	uq/1 uq/1		IJ	ug/1 ug/1		U U	ug/l
5 0	ug/I		U	ug/1		Ü	ug/l ug/l
5 U	ug/1		D	ug/1		U	ug/l
5 U	ug/l		ΰ	ug/l		Ü	ug/l ug/l
5 U	ug/1		Ü	ug/1		Ü	ug/l
5 U	uq/l		Ü	ug/1		Ü	ug/l
5 U	uq/l		Ü	ug/1		Ŭ	ug/l
5 U	uq/l		U	ug/1		Ŭ	ug/l
5 U	ug/1	5	U	ug/l		Ū	ug/l
5 U	ug/1	5	υ	uq/l	5	U	uq/1
5 U	ug/l	5	ij	ug/l	5	U	ug/l
1 U	mg/l	1	IJ	mg/l	1	U	mg/l

07/29/97 BUILDIN: 2273 07:16:00 MAIN BASE, NTC ORLANDO, FLORIDA

Lab	Sample Number: Site Locator	2.	73001 273 3M101		MR47 22 006G	71			B473003 - 2273 06GM301		96100 22	
	Collect Date:		ш. 96			UL 96			5 - JUL - 96	006		722738W4 CT-96
	· Correct Correct		L UNITS	VALUE		UNITS	VALUE		DAL UNITS	VALUE		UNITS
	······		· · ·									
EDB	ug/l			,								
Ethylene dibromide		. 02 (1	ug/l	. 02	U	ug/l		02 U	ug/1	. 02	U	ug/l
EPA 601/602	ug/l											
Chloromethane		1 U	ug/l	1	U	ug/l		1 U	uq/l	1	υ	ug/l
Bromomethane		1.0	uq/l	1	U	ug/1		1 U			Ü	ug/l
Dichlorodifluoromethane		3 U	ug/l	1	U	ug/1	0	1 U	.,		Ū	ug/l
Vinyl chloride		1 U	ug/1	1	U	ug/1		1 U			Ü	ug/l
Chloroethane		1 U	ug/1	1	ŢŦ.	uq/1		1 0	J		U	ug/1
Methylene chloride		5 U	ug/J	5	U	uq/l		5 U			U	uq/l
Trichlorofluoromethane		1 U	ug/1	1	U	uq/I		1 U	.,		U	ug/l
1,1-Dichloroethene) U	ug/l	1	U	ug/1		1 0	- ·		t	ug/1
1,1-Dichloroethane		1 U	uq/1	1	U	uq/I		1 ()	• • • • • • • • • • • • • • • • • • • •		U	ug/l
trans-1,2-Dichloroethene	•	1 17	ug/l	j	U	uq/1		1 U	uq/l	1	U	ug/l
Chloroform		1 U	119/1	1	U	uq/1		1 U	-		U	ug/l
1,2-Dichloroethane		1 ()	ug/l	1	U	uq/1		1 U			U	uq/1
1,1,1-Trichloroethane		1 U	ug/l	1	U	ug/l		1 U			U	uq/l
Carbon tetrachloride		1 11	uq/l	1	IJ	uq/l		1 U			ιŪ	ug/l
Bromodichloromethane		1 U	ug/l	1	U	ug/1		1 U			υ	ug/l
1,2-Dichloropropane		1 13	ug/1	1	U	ug/1		1 0			LÜ	ug/l
cis-1,3-Dichloropropene		1 U	uq/1		U	ug/1		1 U	J .		Ü	ug/l
Trichloroethene		1 U	ug/l	1	U	uq/1		1 U			เบ็	ug/l
Dibromochloromethane		1 U	uq/l	1	U	uq/1		1 U			LU	ug/l
1,1,2-Trichloroethane		1 U	ug/1	1	IJ	uq/1		jυ	J.		เบ	ug/l
trans-1,3-Dichloroproper	ne	1 U	ug/1		U	ug/1		1 U	- 3.		เบ	ug/l
Bromoform		1 U	uq/1		U	ug/1		1 U	•		ιÜ	ug/l
1,1,2,2-Tetrachloroethar	ne	1 U	uq/1		U	uq/1		1 0	- 37		เบ็	ug/l
Tetrachloroethene		1 U	ug/l	1	IJ	ug/1		1 U	4		. ט	. ug/1
Chlorobenzene		1 U	uq/l	1	Ū	ug/1		1 U	• • • • • • • • • • • • • • • • • • • •	22.9		ug/1
1,3-Dichlorobenzene		1 U	119/1		U	uq/1		1 U			เบ	ug/l
1,2-Dichlorobenzene		1 U	ug/l	1	U	ug/1		1 U			เบ	ug/l
1,4-Dichlorobenzene		1 0	ug/1	1	U	uq/1		1 11	. 3, .		LÜ	uq/1
Methyl tert-butyl ether		1 Մ	ug/1	1	IJ	uq/1		1.0			5 U	ug/l
Benzene		1 U	ug/1	1	U	uq/1		1 U	,,	3.2		ug/l
Toluene		1 0	uq/l	1	IJ	ug/)		1 0	3/		เบ	ug/1
Chlorobenzene		1 0	ug/l	-	Ü	ug/l		1 0	٠,٠	22.9		ug/I ug/I
Ethylbenzene		27	ug/l		Ü	ug/l		1 0	-3, -		, l U	ug/1 ug/l
Xylenes (total)			uq/l	-	-	ug/1		- ''	ug/1			ug/l
o-Xylene		4.6	ug/l	1	[]	ug/l		1 U			. U	ug/l ug/l
m,p-Xylene		26	ug/1	2		ug/1		2 U			U	ug/l uq/l
Bromobenzene			ug/l	-	~	uq/l		. 0	ug/1		U	ug/1 ug/1
			g, *			·· 9/ *			ug/ 1		L)	ug/1

A .

07/29/97 BUILD 22/3 07:16:00 MAIN BASE, NTC ORLANDO, FLORIDA

,	e Number: Site Locator Lect Date:	nn 25	473001 2273 69M101 - JUL 96 AL UNITS	VALUE	MR4 736 227 006GM: 25 JUI QUAL 1	र २०१ _{५ - १६}	AVITIE	006 25 -	173003 2273 5GM301 -JUL-96 M. UNITS	VALUI	2: 006GM40 01-0	0017-2 273 1/2273MW4 OCT-96 L UNITS
1,1,1,2-Tetrachloroethane			ug/l			ug/1			ug/l		1 U	ua /1
1,2,3-Trichloropropane		-	ug/1			ug/1			ug/l		1 U	ug/l ug/l
LEAD	սգ/1											
bead		4 . 8	ug/}	٦.	. 5	ug/l	6.	. 3	ug/l		3 U	ug/l
PNA COMPDS	uq/l											
Naphthalene		38 U	ug/l		2 U	ug/l		2 U	ug/l		5 U	/ 1
2-Methylnaphthalene		38 U	ug/1		2 U	ug/l		2 U	ug/l		5 U	ug/l ug/l
1-Methylnaphthalene		3A U	ug/l		2 U	ug/l		2 U	ug/1		5 U	ug/1 ug/1
Acenaphthylene		38 U	uq/1		2 U	ug/1		SU	ug/l		5 U	ug/1 ug/1
Acenaphthene		38 U	ug/l		2 U	uq/l		2 0	ug/1		5 U	ug/1
Fluorene		38 U	ug/1		2 ()	uq/1		2 U	ug/l		5 U	ug/l
Phenanthrene		U RE	ug/l		2 U	uq/1		2 Ü	ug/1		5 U	ug/l
Anthracene		RA II	ug/1		2 ti	uq/l		2 U	ug/1		5 U	ug/l
Fluoranthene		18 11	ug/1		2 U	uq/1		2 U	ug/l		5 U	ug/l
Pyrene		3A ()	ug/l		2 0	ug/1		2 U	ug/1		5 U	uq/l
Benzo (a) anthracene		3A U	ug/l		2 0	ug/1		2 U	ug/l		5 U	ug/l
Chrysene		38 ()	ug/l		2 U	uq/1		2 U	ug/l		5 U	ug/l
Benzo (b) fluoranthene		38 U	ug/1		2 U	ug/1		2 U	ug/l		5 U	ug/l
Benzo (k) fluoranthene		38 U	ug/1		2 U	ug/l		2 U	ug/l		5 U	ug/l
Benzo (a) pyrene		38 U	ug/l		2 U	ug/l		2 U	ug/1		5 U	ug/l
Indeno (1,2,3-cd) pyrene		38 U	ug/1		2 U	ug/l		2 U	ug/l		5 U	ug/l
Dibenzo (a,h) anthracene		38 U	ug/l		2 U	ug/1		2 U	ug/l		5 U	ug/l
Benzo (g.h.i) perylene		38 U	ug/l		2 U	ug/].		2 U	ug/l		5 U	ug/l
TOTAL PETROLEUM HYDROCARBON	mg/1								•			
Total petroleum hydrocarbon		5.05	mg/1	. 1	9	mg/l	.1	1.4	mg/l		3.7	mg/l

07/29/97 BUILDIN: 2273 07:16:00 MAIN BASE, NTC ORLANDO, FLORIDA

Lab Sample Mumber: Site Locator

Collect Date:

VALUE

96100017 3 2273 006GM501/ 2273MW5 01-00T 96

QUAL UNITS

96120066 1 2273 006GM601/MW6 09-DEC 96

QUAL UNITS

VALUE

96120066 · 2 2273 006GM701/MW7 09-DEC-96 VALUE QUAL UNITS

MA311004 2273 006GT101/2273 TW-1 21-FEB-96 VALUE QUAL UNITS

EDB	ug/1								
Ethylene dibromide		. 02 - U	ug/l	. 02 U	ug/1	. 02 U	ug/l	-	ug/l
EPA 601/602	ug/l								
Chloromethane	,	1 U	ug/l	1 U	uq/l	1 U			
Bromomethane		1 U	uq/1	1 U	ug/1	1 U	ug/1	-	ug/l
Dichlorodifluoromethane		1 U	ug/1	1 U	ug/1	' 1 U	ug/1 ug/1	-	ug/l
Vinyl chloride		1 11	ug/1	1 0	ug/1	1 U	ug/1 ug/1	-	ug/l
Chloroethane		1 U	uq/1	1 0	ug/I	1 1)	ug/I ug/I	-	ug/l
Methylene chloride		1 U	uq/l	1 11	ug/}	1 U	ug/1	-	ug/l
Trichlorofluoromethane		j tj	uq/l	1 U	ug/l	1 0	ug/1	-	ug/l
1,1-Dichloroethene		1 U	11q/l	1 0	ug/l	1 0	ug/1	-	ug/l
1,1-Dichloroethane		1 (1	ug/1	1 Ü	ug/1	1 11	ug/1	-	ug/l
trans-1,2-Dichloroethene		1 (1	uq/1	1 U	uq/1	1 17	ug/1	=	ug/l
Chloroform		1 U	uq/1	ίŰ	ng/l	1 U	ug/l	-	ug/l
1,2-Dichloroethane		1 U	uq/1	1 0	ug/1	1 U	ug/1 ug/1	=	ug/l
1,1,1-Trichloroethane		1 υ	uq/l	1 U	ug/l	1 U	ug/l	-	ug/l
Carbon tetrachloride		1 11	ug/1	1 Ü	ug/l	1 U	ug/l	-	ug/l
Bromodichloromethane		1 U	ug/l	1 Ü	ug/1	1 U	ug/1 ug/1	-	ug/l
1,2-Dichloropropane		1 U	ug/1	1 Ü	ug/l	1 0	ug/1	-	ug/l
cis-1,3-Dichloropropene		1 U	ug/l	1 0	ug/l	1 0	ug/l	*	ug/l
Trichloroethene		1 U	uq/l	i Ü	uq/1	1 U	ug/1 ug/1	-	ug/l
Dibromochloromethane		1 U	uq/l	1 U	ug/l	1 U	ug/1 ug/1	-	ug/l
1,1,2-Trichloroethane		1 U	ug/l	1 U	ug/1	1 U	ug/1 ug/1	-	ug/l
trans-1,3-Dichloropropene		1 U	ug/1	1 U	uq/l	1 U		-	ug/l
Bromoform		1 17	ug/1	1 U	ug/1	1 U	ug/1 ug/1	-	ug/]
1,1,2,2-Tetrachloroethane		į U	ug/1	1 0	ug/1	1 U	ug/1 ug/1	-	ug/l
Tetrachloroethene		1 U	ug/1	1 U	uq/1	1 0	ug/1 ug/1	=	ug/l
Chlorobenzene		1 0	ug/1	3.7	uq/1	1 U	ug/1		ug/l
1,3-Dichlorobenzene		1 11	ug/1	1.0	uq/1	1 U	ug/1	1 U	ug/l
1,2-Dichlorobenzene		1 U	ug/1	1 U	ug/3	1 U	ug/1	1 U	ug/l
1,4-Dichlorobenzene		1 U	uq/1	1.0	ug/1	1 (1	ug/l	1 U	ug/1
Methyl tert-butyl ether		5 U	uq/1	5 U	uq/l	5 U	uq/I	1 U	ug/l
Benzene		1 U	ug/1	1 U	uq/l	1 U	ug/1 ug/l	1 U	ug/l
Toluene		1 U	ug/l	1 U	uq/1	1 U	ug/1 ug/1	1 U	ug/l
Chlorobenzene		1 11	ug/l	3.7	ug/l	1 U		1 U	ug/l
Ethylbenzene		1 U	ug/l	1 U	ug/1	1 0	ug/1	1 U	ug/l
Xylenes (total)			ug/1	1 0	ug/1	1.0	ug/]	30	ug/1
o-Xylene		1 U	uq/l	1 U	ug/1	1 U	ug/1	470 E	ug/1
m,p-Xylene		1 U	ug/1	1 U	ug/1	1 0	ug/l	-	ug/l
Bromobenzene		1 U	ug/l	1 0	uq/1 uq/1		ug/1	•	ug/l
			- 31 -	1 0	1197 I	1 U	ug/l		ug/l

07/29/97 BUILD 2273 07:16:00 MAIN BASE, NTC ORLANDO, FLORIDA

1	ab Sample Number: Site Locator Collect Date:	22 00.6GM5.01 01 - 0	0017-3 273 1/-2273MW5 DCT:96 UNITS	VALUE	22 006GM6 09-1	0066-1 273 501/MW6 DEC 96 JUNITS	VALUE	2: 006GM 09-1	0065-2 273 701/MW7 DEC-96 L UNITS	22 006GT101, 21-1	11004 273 /2273 TW-1 FEB-96 L UNITS
1,1,1,2-Tetrachloroet	hane	1 U	ug/l		1 U	ug/1		1 U	ug/l	-	ug/l
1,2,3-Trichloropropar	ne	1 U	ug/l		1 U	ug/l		1 U	ug/l	-	ug/l
LEAD	ug/1										
Lead		3 ()	ug/l		8	ug/1		5	ug/1	-	ug/l
PNA COMPDS	ug/l										
Naphthalene		5 U	ug/l		5 U	ug/l		5 U	ug/l	45 U	ug/l
2-Methylnaphthalene		5 U	ug/1		5 U	ug/l		8	ug/l	45 U	ug/l
1-Methylnaphthalene		5 U	ug/l		5 U	ug/l	1	6	ug/1	45 U	ug/l
Acenapht hylene		5 U	ug/1		5 U	ug/l		5 U	ug/l	45 U	ug/l
Acenaphthene		5 U	ug/1		5 U	ug/1		5 U	ug/l	45 U	ug/l
Fluorene		5 U	ug/l		5 (1	ug/l		5 U	ug/l	45 U	ug/l
Phenant brene		5 U	ug/l		5 U	ug/1		5 U	ug/l	45 U	ug/l
Ant bracene		5 U	ug/1		5 1)	ug/1		5 U	ug/1	45 U	ug/l
Fluoranthene		5 ()	ug/l		5 ()	ug/I		5 11	ug/l	45 U	ug/l
Pyrene		5 tJ	ug/1		5 U	ng/1		5 U	ug/1	45 U	ug/l
Benzo (a) anthracene		5 11	ug/1		5 U	ug/1		5 U	ug/l	45 U	ug/l
Chrysene		5 11	ug/l		5 U	ug/1		5 U	ug/1	45 U	ug/l
Benzo (b) fluoranther		. 5 U	ug/l		5 ()	ug/l		5 U	ug/l	45 U	ug/l
Benzo (k) fluoranther	ie.	5 U	ug/1		5 ()	ug/1		5 U	ug/l	45 U	ug/l
Benzo (a) pyrene		5 U	ug/1		5 U	ug/l		5 U	ug/l	45 U	ug/l
Indeno (1,2,3-cd) pyr		5 U	ug/1		5 U	ug/1		5 U	ug/l	45 U	ug/l
Dibenzo (a,h) anthrac		5 U	ug/l		5 U	ug/I		5 ()	ug/1	45 U	ug/l
Benzo (g,h,i) peryler	ne	. 5 U	ug/l		'5 U	ug/1		5 U	ug/l	45 U	ug/1
TOTAL PETROLEUM HYDROCA	ARBON mg/l										
Total petroleum hydro	ocarbon	1 U	mg/1	1	. 5	mg/1	-	3 . 6	mg/]	-	mg/l

01/29/97 BUILDING 2271 07:16:00 MAIN BASE, DITC ORLANDO, FLORIDA

Lab Sample Number Site Locator

Collect Date:

MA311004DL 2273 006GF101/2273 TW 1DL 21 FEB 96

QUAL UNITS

VALUE

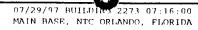
96100017-1 2273 006RB101/RB-1 01 OCT-96 VALUE QUAL UNITS

96120066-5 2273 006RB201/RB2 09-DEC-96 QUAL UNITS

VALUE

97060163-1 2273 006RB301/2273 RB-3 24-JUN-97 VALUE QUAL UNITS

EDB uq/1Ethylene dibromide uq/102 U ug/1. 02 U ug/1.02 U ug/l EPA 601/602 ug/1Chloromethane ug/1 1. U uq/11 U ug/11 U ug/1 Bromomethane ug/1 1 U ug/l 1 U ug/l 1 U uq/l Dichlorodifluoromethane ug/l 1 U ug/11 1) ug/1 1 U ug/l Vinyl chloride ug/11 U uq/11 U ug/l 1 U ug/l Chloroethane ug/l 1 U uq/11 U ug/1 1 U uq/1Methylene chloride ug/l 1 U uq/11 U ug/11 U ug/1Trichlorofluoromethane ug/l 1 U uq/11 U uq/l 1 U ug/l 1,1-Dichloroethene ug/11 U ug/1ug/1 1 U 1 U ug/11,1 Dichloroethane ug/1 1 U ug/l 1 U uq/1 1 U uq/1trans-1,2-Dichloroethene uq/1 1.0 ug/1 1 11 ug/1 1 U uq/1Chloroform ug/11 U uq/11 U ug/1 1 U uq/11,2-Dichloroethane ug/11 U uq/11 U uq/11 U ug/l 1,1,1-Trichloroethane uq/11 U uq/1 1 U ug/l 1 U ug/1Carbon tetrachloride ug/1 1 U ug/11 U ug/l 1 U uq/1Bromodichloromethane ug/11 U uq/11 0 ug/1 1 U ug/1 1,2-Dichloropropane ug/1 1 U ug/l 1 U ug/11 U ug/l cis-1,3-Dichloropropene uq/1ug/11 U ug/l 1 U uq/l Trichloroethene ng/11. 0 uq/11 U υg/l 1 U uq/l Dibromochloromethane ug/11 U uq/11 U ug/l 1 U ug/1 1,1,2-Trichloroethane ug/l 1 U uq/11 17 ug/11 U ug/1 trans-1,3-Dichloropropene ug/11 0 uq/11 11 ug/l 1 U ug/1 Bromoform ug/11 U uq/11 U ug/11 U ug/11,1,2,2-Tetrachloroethane ug/11 0 uq/11 U ug/l 1 U ug/l Tetrachloroethene ug/l 1 U ug/11 U ug/11 U ug/l Chlorobenzene 5 U ug/11 U uq/11 U ug/l 1 U uq/l 1,3-Dichlorobenzene 5 U ug/11 U uq/11 U ug/11 U uq/11,2-Dichlorobenzene 5 U ug/11 U ug/1 1 U ug/l 1 U ug/l 1,4-Dichlorobenzene 5 U ug/1 1 U uq/11 U uq/11 U uq/1Methyl tert-butyl ether 5 U ug/15 U ug/1 5 U uq/15 U uq/1Benzene 5 U uq/11 U ug/1 1 U ug/l 1 U ug/l Toluene ug/1 5 U 1 U uq/l 1 U ug/1 1 U ug/1 Chlorobenzene 5 U ug/1 1 17 ug/l 1 U ug/1 1 U uq/1Ethylbenzene 24 ug/1 1 0 uq/1 ug/l 1 U 1 U ug/1Xylenes (total) 500 D uq/l ug/1ug/1 uq/l o-Xylene ug/11 U ug/l 1 U ug/l 1 U ug/1 m,p-Xylene uq/11 U ug/1 1 U ug/l 1 U ug/l Bromobenzene ug/1 1 U uq/1 1 U ug/l 1 U ug/1



	ple Number: Site Locator Dect Date:	006GT10 2	311004DL 2273 01/2273 TW-1DL 01 FEB-96 0UAL UNITS	VALUE	2 006RB 01	0017 1 273 101/RB-1 OCT-96 L UNITS	VALUE	2 006RB 09-	0066-5 273 201/RB2 DEC-96 L UNITS	006 VALUE	22 RB3017 24 - 3	0163-1 273 /2273 RB-3 JUN-97 L UNITS
1,1,1,2-Tetrachloroethane			ug/1		1 U	ug/l		1 U	uq/l		1 U	ug/l
1,2,3 Trichloropropane			ug/l		1 U	ug/l		1 U	ug/l		1 U	ug/1
LEAD	ug/l					*						
Lead			nq/l		3 11	ug/l		3 U	ug/1		3 U	ug/l
PNA COMPDS	ug/l											
Naphthalene			11 q /1		5 U	ug/1		5 U	uq/l		5 U	ug/l
2-Methylnaphthalene		•	ug/1		5 U	119/1		5 U	ug/l		5 U	ug/l
1-Methylnaphthalene		-	ug/l		5 U	ug/l	1	5 ()	ug/1		5 U	ug/l
Acenapht hylene		-	ug/1		5 U	uq/1		5 U	ug/1		5 U	ug/l
Acenaphthene			ug/l		5 U	ug/l		5 U	ug/l		5 U	ug/l
Fluorene		-	ug/l		5 U	uq/1		5 U	ug/l		5 U	ug/l
Phenanthrene		**	ug/l		5 U	uq/l		5 U	uq/l		5 U	ug/l
Anthracene		**	ug/l		5 ()	uq/l		5 ()	ug/1		5 U	ug/l
Fluoranthene		-	ug/1		5 U	uq/l		5 U	u q /]		5 U	ug/l
Pyrene			ug/l		5 U	ug/l		5 U	ug/1		5 U	ug/1
Benzo (a) anthracene			uq/1		5 U	ug/l		5 U	ug/l		5 U	ug/l
Chrysene			uq/L		5 U	ug/l		5 U	uq/l		5 U	ug/1
Benzo (b) fluoranthene			ug/l		5 U	uq/l		5 U	uq/1		5 U	ug/l
Benzo (k) fluoranthene		**	ug/1		5 U	ug/l		5 0	ug/l		5 U	ug/1
Benzo (a) pyrene		-	ug/1		5 U	ug/l		5 0	ug/1		5 U	ug/l
Indeno (1,2,3-cd) pyrene		-	ug/1		5 U	uq/1		5 U	ug/l		5 Ü	ug/l
Dibenzo (a,h) anthracene			uq/l		5 U	uq/1		5 U	ug/1		5 U	ug/l
Benzo (g,h,i) perylene			uq/l		5 U	ug/1		5 ()	ug/1		5 U	ug/1
TOTAL PETROLEUM HYDROCARBON	mq/l											
Total petroleum hydrocarbon		•	mg/1		1 U	mq/1		1 17	mg/l		1 U	mg/l



07/29/97 BUILD 2273 07:16:00 MAIN BASE, NTC ORLANDO, FLORIDA

Lab Sample Number: Site Locator Collect Date: 96120066-6 2273 TRIP BLANK 09 DEC 96

QUAL-UNITS

VALUE

G8232005 2273 TRIP BLK 15-AUG 95 QUAL UNITS

VALUE

MB473005 2273 TRIPBLANK 25-JUL-96 VALUE QUAL UNITS

EDB	/1						
Ethylene dibromide	uq/1		4.5	•			
achyrene dibromide			ug/l	*	ug/l	-	սց/1
EPA 601/602	ug/l						
Chloromethane	- ,,, -	1 U	uq/1	1	U ug/l		
Bromomethane		1 0	ug/1	1	37 -	1 U	
Dichlorodifluoromethane		1 0	ug/1	1	- 9, .	1 U	99, 1
Vinyl chloride		iÜ	ug/1	1		1 11	, -
Chloroethane		1 U	ug/1	1		1 U	ug/l
Methylene chloride		1 0	ug/1	, 5		1 U	31
Trichlorofluoromethane		1 U	ug/1	1		5 U	ug/l
1,1-Dichloroethene		1 Ü	ug/l	1		1 17	ug/l
1,1-Dichloroethane		1 U	ug/1	1		1 U	ug/1
trans-1,2-Dichloroethene		1 U	ug/1	1	. ,, -	1 U	ug/l
Chloroform		1 0	ug/1	, 1		1 0	ug/1
1,2-Dichloroethane		1 U	ug/1			1 U	ug/1
1,1,1 Trichloroethane		1 Ü	ug/l	1	4/	1 0	ug/1
Carbon tetrachloride		1 (1	uq/1	1	,,	1 U 1 U	ug/l
Bromodichloromethane		1 U	ug/l	1		1 U	ug/1
1,2-Dichloropropane		1.0	ug/1	1		1 0	ug/1
cis-1,3-Dichloropropene		1 U	ug/1	i	, ,	1 0	ug/l
Trichloroethene		1 U	uq/l	1		1 U	ug/1
Dibromochloromethane		1 11	ug/1	ī	, .	1 U	ug/1
1,1,2-Trichloroethane		1 U	ug/l	j		1 0	ug/1
trans-1,3-Dichloropropene		1 U	ug/1	1	,, -	1 U	ug/1 ug/1
Bromoform		1 U	ug/1	1	- 9, -	1 U	ug/1 ug/1
1,1,2,2-Tetrachloroethane		1 U	ug/l	1		1.0	ug/l
Tetrachloroethene		1 U	ug/1	1		1 U	ug/1 ug/1
Chlorobenzene		1 0	uq/l	1		1 0	ug/1 ug/1
1,3-Dichlorobenzene		1 U	ug/l	1 1		1 U	ug/l
1,2-Dichlorobenzene		1 U	ug/l	1 1		1 U	ug/l
1,4-Dichlorobenzene		1 U	ug/1	1 (î Ü	ug/l
Methyl tert-butyl ether		5 U.	ug/l	1 1		1 11	ug/1
Benzene		1 U	ug/l	1 (1 U	ug/1
Toluene		1 U	ug/l	1 (1 17	ug/1
Chlorobenzene		1 U	ug/l	1 (,.	1 0	ug/1
Ethylbenzene		1 U	ug/1	1 (1 11	ug/1
Xylenes (total)		-	ug/]	1 (,.	-	tig/1
o-Xylene		1 U	ug/l	-	ug/J	1 (1	ug/1 ug/1
m,p-Xylene		1 U	ug/l	-	ug/l	2 U	ug/1 ug/1
Bromobenzene		1 U	ug/l		ug/1	2 0	ug/1 ug/l
			-		7, 1	,	ug/1

07/30/97 BUILDING 2273-- TS REPORT ---- 06:59:12
MAIN BASE, NTC ORLANDO, FLORIDA

	ab Sample Number: Site Focator Collect Date:	2 006P 09	0066 4 273 301/DW3 DEC 96 L UNITS	006 <i>G</i> 15 - A	32001 273 3C101 AUG 95 FUNITS	2. 0066 15 .	32002 273 GC201 AUG- 95 5 UNITS	VALUE	22 0060 15- <i>1</i>	32003 273 3C301 AUG-95 L UNITS
				•						
EPA 601/602	ug/l									
Chloroform		5.4	uq/1	. 0	ug/l	. 🕕	uq/l		- U	ug/l
Chlorobenzene		2	ug/1	. · · · · · · · · · · · · · · · · · · ·	$\eta q/1$	- ti	ug/l		- U	ug/l
1,2-Dichlorobenzene		110	ug/1	· U	tig/1	U	ug/l		- U	ug/l
1,4-Dichlorobenzene		4.9	ug/l	· U	ug/1	- U	ug/1 .		- บั	ug/l
Renzene		· U	ug/1	· 1J	ug/1	- U	ug/l		- U	ug/l
Chlorobenzene		2	ug/1	σ	ug/1	. 11	uq/l		- U	ug/l
Et hyl benzene		- U	ug/]	- U	ug/l	, - U	ug/1		- U	ug/l
Xylenes (total)			ug/1	- U	ug/1	- ti	ug/l		- Ü	ug/l
o-Xylene		· U	ug/l		ug/1		ug/l		-	ug/l
m,p-Xylene		· U	ug/1	18	ug/1		ug/l		-	ug/l
LEAD	ug/1									
Lead	,,	15	ug/l	19.5	uq/l	2.7	ug/l		- U	ug/l
PNA COMPDS	ug/1									
Naphthalene	,,,,,	1,1	ug/1	11	ug/l	,,	. (1			
2-Methylnaphthalene		Ü	uq/L	11	ug/1	11	uq/I		- U	ug/l
1-Methylnaphthalene		- 11	ug/1	Ü	ug/1	. 1)	ug/1		- U	ug/l
			1.97	,,	0.47.1	. 11	ug/l		- U	ug/l
TOTAL PETROLEUM HYDROCA	RBON mg/l									
Total petroleum hydro		U	mg/l	- U	mq/l	U	mg/1		- บ	mg/l

Lie	ab Sample Number: Site Locator Collect Date:	2 00 <i>6</i> 15 -	32004 273 GC401 AUG-95 IL UNITS	VALUE		7.3	ooe Value	2: 5GD10 01-0	0017-4 273 1/2273DW1 OCT-96 L UNITS	VALUE	006GD1 02-3	0005-1 273 102/DW-1 JAN-97 JUNITS
EPA 601/602	ug/l											
Chloroform		- U	ug/l		-	ug/l		- U	ug/1		- U	ug/l
Chlorobenzene		- U	ug/1		_	ug/1		- U	ug/l		- U	ug/l
1,2 Dichlorobenzene		- U	ug/l		-	ug/l		- U	ug/1	-	- Ü	ug/l
1,4-Dichlorobenzene		- U	ug/1			ug/l		- U	ug/l		- Ū	ug/l
Benzene		· U	ug/1		-	ug/l		- U	ug/l		- U	ug/l
Chlorobenzene		- 11	ug/l			ug/L	1	- U	ug/1		- U	ug/l
Et hyl benzene		- U	ug/1			ug/l	236.	5	ug/l	11	. В	ug/l
Xylenes (total)		- U	ug/l			ug/T			ug/l		-	ug/l
o-Xylene		**	ug/1		-	ug/l	314.5		ug/l	36	. 1	ug/l
m,p-Xylene		~	. ug/1			uq/l	8.39	5	ug/1	74	. 7	ug/l
LEAD	ug/1											
Lead	,	4.1	ug/l		-	ug/l	-	· U	ug/l		-	ug/l
PNA COMPDS	uq/1											
Naphthalene	,.	U	uq/l		- U	uq/l		- U	ug/l		_	u= /1
2-Methylnaphthalene		- U	ug/1		· U	uq/I		- U	ug/l		_	ug/l ug/l
1-Methylnaphthalene		· U	ug/1		- U	ug/l		- Ü	ug/1		-	ug/1 ug/1
									-3/-			ug/ 1
TOTAL PETROLEUM HYDROCAR	RBON mg/l											
Total petroleum hydrod	carbon	U	mg/1		-	mg/l		- U	mg/1		-	mg/l

07/30/97 BUILDING 2273--- TS REPORT---- 06:59:12
MAIN BASE, NTC ORLANDO, FLORIDA

	ab Sample Number: Site Locator Collect Date:	22 no6GD1037 24 7	0163 2 273 72273 DW 1 1UN 97 , UNITS	23 2008 1-90	0066 3 273 201/DW2 DEC-96 UNITS	22 006GD2 02 - J	005-2 73 02/DM-2 AN-97 UNITS	006GD20 24	60163-3 2273 3/2273 DW-2 -JUN-97 AL UNITS
EPA 601/602 Chloroform	ug/l	- U	ug/l	- U	ug/l	- U	ug/1	· - U	ug/l
Chlorobenzene		- U	ug/l	39	ug/l	12.7	ug/l	29.9	ug/l
1,2-Dichlorobenzene		- U	ug/l	- U	ug/l	- U	ug/l	- U	ug/l
1,4-Dichlorobenzene		~ U	ug/l	- U	ug/l	- U	ug/l	- U	ug/l
Benzene		- U	ug/1	4.8	ug/l	- U	ug/l	3.3	ug/l
Chlorobenzene		- U	ug/l	39	ug/l	12.7	ug/l	29.9	ug/l
Ethylbenzene		5.4	ug/1	7	ug/1	2.1	ug/l	4	ug/l
Xylenes (total)		-	ug/1	*	ug/l		ug/l	[ug/l
o-Xylene		130	ug/l	8.6	ug/l	3,5	ug/l	17.2	ug/1
m,p-Xylene		120	ug/l	16.3	ug/l	в	ug/1	28.8	ug/l
LEAD	ug/1								
Lead		- U	ug/l	11	ug/1		ug/1	- U	ug/l
PNA COMPDS	ug/1								
Naphthalene	•	- U	ug/l	- U	ug/1	-	ug/l	- U	ug/l
2-Methylnaphthalene		- 11	ug/1	= U	ug/1	~	ug/l	- U	ug/l
1-Methylnaphthalene		~ U	ug/l	- U	ug/l	-	ug/1	- U	ug/1
TOTAL PETROLEUM HYDROC Total petroleum hydr		- U	mg/1	- ប	mg/l	· -	mg/l	- U	mg/l

Total petroleum hydrocarbon

07/30/97 BUILDING 2273--- MITS REPORT---- 06:59:12

MAIN BASE, NTC ORLANDO, FLORIDA

Lab Sample Number: 97010005-3 97060163-4 97060163-5 97060163-6 Site 2273 2273 2273 2273 Locator 006GD302/DW-3 006GD303/2273 PW-3 006GD401/2273 DW-4 006GD501/2273 DW-5 Collect Date: 02-JAN-97 24 JUN 97 24 - JUN - 97 24-JUN-97 VALUE QUAL UNITS VALUE STIMU JAUO VALUE QUAL UNITS VALUE QUAL UNITS EPA 601/602 ug/1 Chloroform ~ U ug/1- U ug/l - U ug/1 - U ug/l Chlorobenzene - U ug/1- U ug/1- U ug/l - 0 ug/l 1,2-Dichlorobenzene IJ ug/1 42.8 ug/1 - U ug/1 - U ug/l 1,4-Dichlorobenzene · U ug/1 - U ug/1 ~ Ù ug/1 - U ug/1 Benzene - U ug/1 - 11 ug/l ~ U ug/1- U Chlorobenzene uq/l - 17 ug/l - U uq/1 - U uq/l - U ug/l Ethylbenzene - U ug/1 - U uq/13.7 ug/1 - U Xylenes (total) ug/l ug/1uq/1uq/I ug/l o-Xylene - 1) uq/1U ug/1 3.9 ug/1- U ug/1 m,p-Xylene U uq/1- IJ uq/18.1 ug/1 - U ug/l LEAD ug/1Lead ug/1 - IJ uq/1- 11 ug/1 - U ug/l PNA COMPDS ug/1Naphthalene ug/1U ug/1- U ug/l В ug/l 2-Methylnaphthalene ug/1 IJ ug/1 ~ [J ug/l 22 ug/l 1-Methylnaphthalene ug/1U ng/l - U tig/1 16 ug/l TOTAL PETROLEUM HYDROCARBON mg/1

- U

mq/1

- U

mg/l

~ U

mg/1

mg/1

07/30/97 BUILDING 2273--- (ITS REPORT ---- 06:59:12

MAIN BASE, NTC ORLANDO, FLORIDA

	Lab Sample Number: Site Locator Collect Date:	2006 25 -	173001 2273 5GM101 JUL 96 M. UNITS	VALUE	MB473002 2273 006GM201 25-JUL-96 QUAL UNIT		00 25	473003 2273 6GM301 -JUL-96 AL UNITS	006 VALUE	96100017-2 2273 GM401/2273MW4 01-OCT-96 QUAL UNITS	٠
EPA 601/602	n g /]			•							
Chloroform Chlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Benzene Chlorobenzene Ethylbenzene Xylenes (total) o-Xylene m,p-Xylene		- tI - U - U - U - II - U 27	ug/1 ug/1 ug/1 ug/1 ug/1 ug/1 ug/1 ug/1		- U ug/ - U ug/ - U ug/ - U ug/ - U ug/ - U ug/ - U ug/ - U ug/ - U ug/ - U ug/	1 1 1 1 1 1	- U - U - U - U - U - U - U - U	ug/1 ug/1 ug/1 ug/1 ug/1 ug/1 ug/1 ug/1	22.9 - 3.2 22.9 -	U ug/l U ug/l ug/l ug/l ug/l ug/l	
LEAD Lead	ug/1	4 . 8	ug/l	3.9	5 ug/	l 6	. 3	ug/l	-	U ug/l	
PNA COMPDS Naphthalene 2-Methylnaphthalene 1-Methylnaphthalene TOTAL PETROLEUM HYDRO Total petroleum hyd	e DCARBON mg/l	- U - U - U	ug/1 ug/1 ug/1	-	U ug/ U ug/ U ug/	1 1	- U - U - U	ug/1 ug/1 ug/1	-	U ug/l U ug/l U ug/l	

07/30/97 BUILDING 2273 - TITS REPORT

MAIN BASE, NTC ORLANDO, FLORIDA

96100017-1

Lab Sample Number: MA311004DL Site 2273 Locator

VALUE

Collect Date:

2273 006GT101/2273 TW-1DL 006RB101/RB-1 21-FEB 96 01-OCT-96 QUAL UNITS VALUE QUAL UNITS

96120066-5 2273 006RB201/RB2 09-DEC-96 VALUE QUAL UNITS

97060163-1 2273 006RB301/2273 RB-3 24 - JUN - 97 OUAL INITS

						VALOR OO	ar owits	AVPOE GO	AL UNITS
EPA 601/602	ug/1								
Chloroform	**	=	ug/l	.,	/)				
Chlorobenzene		. 0	uq/1	- 11	ug/1	- 13	ug/1	- U	ug/l
1,2-Dichlorobenzene		. ប	ug/l	~ U	ug/1	· U	ug/l	- U	ug/l
1,4-Dichlorobenzene		- U	ug/1	- 17	ug/1	- U	ug/l	- U	ug/l
Benzene		. U	ug/1 ug/1	- U	ug/1	- U	ug/l	- U	ug/l
Chlorobenzene		- U		- 11	ug/1	< U	ug/l	- U	ug/l
Et hylbenzene		24	ug/1 ug/1	- 1)	uq/1	' - U	ug/1	- U	ug/l
Xylenes (total)		500 D	uq/1 uq/1	. [[ug/1	- U	ug/l	- U	ug/l
o-Xylene		500 D			uq/1		ug/l	-	ug/l
m,p-Xylene			uq/1	U	ug/1	- 1 1	ug/l	- U	ug/l
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			ug/l	- U	ug/l	- U	ug/l	- U	ug/1
LEAD	uq/l								- 5, -
Lead	1197 1		(3						
		-	ug/l	- U	ug/l	- U	ug/1	- U	ug/l
PNA COMPDS	սզ/1								-3, -
Naphthalene	ug/ i								
2-Methylnaphthalene			uq/l	- U	ug/l	- U	ug/l	- U	ug/l
1-Methylnaphthalene		-	ug/l	- U	ug/l	- U	ug/l	- U	ug/l
1 - eachy maphichatene		-	ug/l	· U	ug/l	U	ug/1	- Ŭ	ug/l
TOTAL PETROLEUM HYDROCARBON			1				J.	- 0	ug/ i
	mg/1								
Total petroleum hydrocarbon		•	mg/1	- U	mg/l	- U	mg/l	- U	/1
						•		- 0	mg/l

07/30/97 BUILDING 2273

BUILDING 2273 TS REPORT - - MAIN BASE, NTC OKLANDO, FLORIDA

06:59:12

		MAIN MASE, NIC ORLANDO, FEORIDA										
	ab Sample Number: Site Locator Collect Date:	VALUE		73		VALUE		73	VALUE		25-JI	
EPA 601/602 Chloroform Chlorobenzene	ug/l		- U	ug/1 ug/1			· U	ug/] ug/]			n u	ug/1 ug/1
1,2-Dichlorobenzene 1,4-Dichlorobenzene Benzene Chlorobenzene Ethylbenzene Xylones (total) o-Xylene m,p-Xylene			- U - U - U - U - U	ug/l ug/l ug/l ug/l ug/l ug/l ug/l ug/l			- U - U - U - U - U - U	ug/1 ug/1 ug/1 ug/1 ug/1 ug/1 ug/1		-	0 0 0 0	ug/1 ug/1 ug/1 ug/1 ug/1 ug/1 ug/1
LEAD Lead	ug/1		-	ug/l				ug/l		-		ug/1

ug/l

ug/1

ug/1

mg/1

ug/l

mg/1

PNA COMPDS

Naphthalene

2-Methylnaphthalene

1-Methylnaphthalene

TOTAL PETROLEUM HYDROCARBON

Total petroleum hydrocarbon

mq/1

ug/1

uq/1

ug/1

mg/l

ug/l

ug/1

ug/1

GROUNDWATER ANALYTICAL RESULTS OBTAINED BY TETRA TECH NUS

GROUNDWATER ANALYTICAL RESULTS BUILDING 2273

NAVAL TRAINING CENTER ORLANDO, FLORIDA

			_	ORLANDO, FLOR						
WELL DESIGNATION	DW-5	DW-5 (Duplicate)	DW-5	DW-5 (Duplicate)	DW-6	DW-6	DW-7	DW-7	DW-8	DW-8
SAMPLE ID	N2273GDW0510	N2273GDW0510-D	N2273GDW0513	N2273GDW0513-D	N2273GDW0610		N2273GDW0710	N2273GDW0713	N3373CDW0910	NOOZOCOMOO4
LAB ID	A9J050163003	A9J050163004	A0L010187006	A0L010187007	A9J040115003	A0L010187008	A9J050163001	A01.0404.07000	142273GD440810	
SAMPLE DATE	10/2/99	10/2/99	11/30/00	11/30/00	10/1/99	11/30/00			A9J040115004	A0L010187011
VOLATILES (µg/L)				11/30/00	10/1/99	11/30/00	10/2/99	11/30/00	10/1/99	11/30/00
1,1,1-Trichloroethane	2.5 U	5 U	1 U	1 U	5 Ú		art the pasticles		Section The Section	- 19 72 July 17 July
1,1,2,2-Tetrachloroethane	2.5 U	5 U	ıŬ	1 U	5 U	10	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	2.5 U	. 5 Ü	1 U	1 0	5 U	10	1 U	1 U	1 U	1 U
1,1-Dichloroethane	2.5 U	5 U	1 Ü	1 U	5 U	10	1 U	1 U	1 U	1 U
1,1-Dichloroethene	2.5 U	5 U	1 Ü	10	5 U	10	1 U	1 U	1 U	1 U
1,2-Dichloroethane	2.5 U	5 U	10	1 U	5 U	10	10	, 1U	1 U	10
1,2-Dichloropropane	2.5 U	5 Ū	10	1 U	5 U	1 U	1 U	1 U	1 U	1 U
2-Butanone	25 UR	50 UR	10 U	10 U		10	1 U	1 U	1 U	1 U
2-Hexanone	25 UJ	50 UJ	10 U	10 U	50 UR	10 U	10 UR	10 U	10 UR	10 U
4-Methyl-2-Pentanone	25 UJ	50 UJ	5 U	5 U	50 U	10 U	10 UJ	10 U	10 U	10 U
Acetone	25 UR	50 UR	5 U	5 U	50 U	5 U	10 UJ	5 U	10 U	5 U
Benzene	2.5 U	5 U	1 Ü	1 U	83 J	5 U	23 J	5 U	10 UR	5 U
Bromodichloromethane	2.5 U	. 5 U	10	and the second of the second o	5 U	0.12 J	5.8	3.2	0.71 J	1 U
Bromoform	2.5 U	5 U	10	1 U	<u>5 U</u>	10	1 U	1 U	1 U	1 U
Bromomethane	2.5 U	5 U	10	the second of the second of the	5 U	10	1 U	1 U	1 U	1 U
Carbon Disulfide	2.5 U	5 U	10 +	1 U	5 U	1 U	10	10	1 U	1 U
Carbon Tetrachloride	2.5 U	5 U	10	1 U	5 U	1 U	1 U	1 U	10	1 U
Chlorobenzene	2.5 U	5 U	10	10	5 U	1 U	1 U	1 U	10	1 Ü
Chloroethane	2.5 U	5 U	10	1 U	5 U	0.35 J	1.3	0.75 J	11	1 U
Chloroform	2.5 U	5 U	1 U		5 Ü	1 U	1 U	1 U	1 U	1 U
Chloromethane	2.5 U	5 U	10	1 U	0.71 J	1 U	0.23 J	1 U	0.14 J	ŧυ
Cis-1,2-Dichloroethene	2.5 U	5 U	10	1 U	5 U	1 U	1 U	1 U	1 U	1 U
Cis-1,3-Dichloropropene	2.5 U	5 U	1 U	10	5 U	1 U	0.12 J	0.11 J	1 U	1 U
Dibromochloromethane	2.5 U	5 U '	1 U	10	5 U	1 U	1 U	1 U	1 U	1 Ü
Ethylbenzene	2.5 U	5 U	10	en a como en la companione de la companione de la collection de la collect	.5 U	1 U	1 U	1 U	1 U	1 U
Methyl Tert-Butyl Ether	NA NA	NA NA	NA NA	1 U	5 U	0.3 J	0.36 J	0.25 J	1.2	1 U
Methylene Chloride	2.5 U	5 Ü	1 0	NA	NA NA	NA	NA NA	NA	NA	NA
Styrene	2.5 U	5 U	10	1 U	5 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	2.5 ∪	5 U	1 0		5 U	1 U	10	1 U	1 U	1 U
Toluene	2.5 U	5 U	10	10	5U	1 U	1 U	10	1 U	1 U
Trans-1,2-Dichloroethene	2.5 U	5 U	10	10	5 U	1 U	1 U	0.16 J	0.15 J	1 U
Trans-1,3-Dichloropropene	2.5 U	5 U	10	1.0	5 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	2.5 U	5 U	10 +	1 📙 📗	5 U	1U	1U	1 U	1 U	1 U
Vinyl Chloride	2.5 U	5 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
Xylenes, Total	2.5 U	5 U	10	1 0	5 U	1 U	1 U	1 U	1 U	ίŪ
PAHs (µg/L)				1 U	100	1 U	0.94 J	1 U	9.2	1 U
1-Methylnaphthalene	21	20	25	100	skalda er - 6-	<u> </u>			a la sella di sella di sella di sella di sella di sella di sella di sella di sella di sella di sella di sella d	
2-Methylnaphthalene	28	27	36	22	NA	NA .	NA .	NA	2 U	2 UJ
Acenaphthene	1 0	10	0.55 J	33	NA	NA	NA	NA	2 U	2 UJ
Acenaphthylene	1 Ü	10	1 U	- 1 U	NA	NA	NA	NA	1 U	1 UJ
Anthracene	10	- 1U	10	10	NA	NA	NA	NA	10	1 UJ
Benzo(A)anthracene	0.1 U	0.1 U	0.1 U	0.1 U	NA	NA NA	NA	NA	1 U	1 UJ
Benzo(A)pyrene	0.1 U	0.1 U	0.1 U	0.1 U	NA NA	NA	NA	NA	0.1 U	0.1 UJ
Benzo(B)fluoranthene	0.1 U	0.1 U	0.10	en a companie de d'accesa de la contra	NA	NA	NA .	NA	0.1 U	0.1 UJ
Benzo(g,h,i)perylene	0.1 U	0.1 U	0.1 U	0.1 U 0.1 U	NA	NA	NA	NA	0.1 U	0.1 UJ
Benzo(k)fluoranthene	0.3 U	0.3 U	0.3 U	0.1 U	NA NA	NA	NA .	NA	0.1 U	0.1 UJ
Chrysene	0.1 U	0.1 U	0.1 U	0.3 U	NA NA	NA .	NA	NA	0.3 U	0.3 UJ
Dibenzo(a,h)anthracene	0.1 U	0.1 U	0.1 U	0.1 U	NA NA	NA	NA	NA	0.1 U	0.1 UJ
luoranthene	0.2 U	0.2 U	0.1 U	the first of the second	NA.	NA	NA	NA	0.1 U	0.1 UJ
luorene	2 U	2 U	2 U	0.2 U	NA	NA NA	NA	NA	0.2 U	0.2 UJ
ndeno(1,2,3-cd)pyrene	0.1 U	0.1 U	0.1 U	2U	NA NA	NA	NA	NA	2 U	2 UJ
Vaphthalene	15	14	12	0.1 U	NA	NA	NA	NA	0.1 U	0.1 UJ
Phenanthrene	1 U	10	10		NA NA	NA	N <u>A</u>	NA	0.4 J	2 UJ
Pyrene	0.1 U	0.1 U	0.1 U	10	NA	NA	NA	NA	1 U	1 UJ
PETROLEUM HYDROCARBONS (mg/L)		0.70	0.10	0.1 U	NA	NA .	NA	NA	0.1 U	0.1 UJ
otal Petroleum Hydrocarbons	NA I	NA	NA	NA.	and the state of the	and Market San Control		Frankling Company of the	A SA Harris Co. Co. Sa Mission	
			IVA	NA	NA	NA !	NA	NA	NA	NA
A - No analysis performed										

GROUNDWATER ANALYTICAL RESULTS BUILDING 2273

NAVAL TRAINING CENTER ORLANDO, FLORIDA

· · · · · · · · · · · · · · · · · · ·				ANDO, FLORIDA					
WELL DESIGNATION	DW-9	DW-9	DW-9	MW-4	MW-4	MW-8	MW-8	MW-9	MW-9
SAMPLE ID	N2273GDW0911	N2273GDW0912	N2273GDW0913	N2273GMW0410	N2273GMW0413	N2273GMW0810	N2273GMW0813	N2273GMW0910	N2272GMM0012
LAB ID	A0D180174018	A0F030167001	A0L010187010	A9J040115001	A0L010187003	A9J040115002	A0L010187004	A9J050163002	A0L010187005
SAMPLE DATE	4/17/00	6/2/00	11/30/00	9/30/99	11/30/00	10/1/99	11/30/00	10/2/99	the second second second
VOLATILES (vg/L)		The Court of the			11/00/00	10/1/33 Sharing Salar	11/30/00	10/2/99	11/30/00
1,1,1-Trichloroethane	1 U	1.7 U	1 U	2.5 U	1 U	2.5 ∪	0.42 J	2.5 U	1 U
1,1,2,2-Tetrachloroethane	1 U	1.7 U	1 U	2.5 U	10	2.5 U	1 U	2.5 U	10
1,1,2-Trichloroethane	1 U	1.7 U	10	2.5 U	1 Ü	2.5 U	iΰ	2.5 U	1 0
1,1-Dichloroethane	1 U	1.7 U	1 U	2.5 U	1 U	2.5 U	1 U	2.5 U	iŬ
1,1-Dichloroethene	1 U	1.7 U	1 U	2.5 U	10	2.5 U	1 Ü	2.5 U	1 U
1,2-Dichloroethane 1,2-Dichloropropane	1 U	1.7 U	1 U	2.5 U	1 U	2.5 U	1 U	2.5 U	1 U
2-Butanone	1 U	1.7 U	1 U	2.5 U	1 U	2.5 U	1 U	2.5 U	1 U
2-Hexanone	2.3 J 10 U	17 UR	10 U	48 J	0.4 J	25 UR	10 U	25 UR	10 U
4-Methyl-2-Pentanone	10 U	17 U 17 U	10 U	25 U .	10 U	25 U	10 U	25 UJ	10 U
Acetone	13 J	6.5 U	5 U	25 U	5 U	12 U	5 U	25 UJ	5 U
Benzene	1.2	0.45 J	0.28 J	25 UR 1 J	5 U	25 UR	5 U	25 UR	5 U
Bromodichloromethane	1 Ū	1.7 U	1 U	2.5 U	0.18 J	2.5 U	10	2.5 U	1 U
Bromoform	1 U	1.7 U	1 U	2.5 U	1 U 1 U	2.5 U 2.5 U	10	2.5 U	1 U
Bromomethane	1 UJ	1.7 U	1 Ü	2.5 U	10	2.5 U	1 U 1 U	2.5 U	1 U
Carbon Disulfide	0.75 J	0.32 J	1 0	2.5 U	1 U	2.5 U	1 U	2.5 U 2.5 U	1 U
Carbon Tetrachloride	1 U	1.7 U	1 Ü	2.5 U	1 Ŭ	2.5 U	10	2.5 U	1 U
Chlorobenzene	9.8	8.2	5	16	3.9	2.5 U	1 0	2.5 U	1 U
Chloroethane	1 U	1.7 U	1 ∪	2.5 U	1 U	2.5 U	1 0	2.5 U	1 U
Chloroform Chloromethane	1.1	1.7 U	1 U	2.5 U	1 Ū	2.5 U	10	0.89 J	1 0
Cis-1,2-Dichloroethene	10	1.7 U	1 U	2.5 U	1 U	2.5 U	1 U	2.5 U	1 U
Cis-1,3-Dichloropropene	10	1.7 U	10	2.5 U	1 U	2.5 U	1 U	2.5 U	1 U
Dibromochloromethane	1 U	1.7 U	1 U	2.5 U	1 U	2.5 U	1 Ü	2.5 U	1 U
Ethylbenzene	1.4	1.7 U 1.6 J	1 0	2.5 U	1 U	2.5 U	1 U	2.5 U	1 U
Methyl Tert-Butyl Ether	NA I	NA NA	1.8 NA	2.5 U	1U	2.5 U	1 U	2.5 U	1 U
Methylene Chloride	- 10 -	1.7 U	- <u>NA</u>	NA	NA	12 U	1 U	NA NA	NA
Styrene	1 Ü	1.7 U	10	14 U 2.5 U	1 U	2.5 U	1 <u>U</u>	2.5 U	10
Tetrachloroethene	1 U	1.7 U	10	2.5 U	1 U	2.5 U 2.5 U	1 U	2.5 U	1 U
Toluene	1 U	1.7 U	1 0	2.5 U	0.14 J	2.5 U	1 U	2.5 U	1 U
Frans-1,2-Dichloroethene	1 U	1.7 U	10	2.5 U	1 U	2.5 U	1 U	2.5 U 2.5 U	1 U
Frans-1,3-Dichloropropene	1 U	1.7 U	1 U	2.5 U	10	2.5 U	10	2.5 U	10
Trichloroethene	1 U	1.7 U	1 U	2.5 U	10	2.5 U	2.6	2.5 U	1 U 1 U
/inyl Chloride	1 U	1.7 U	1 U	2.5 U	1 U	2.5 U	1 U	2.5 U	10
(ylenes, Total PAHs (μg/L)	4	4.1	1.5	2.5 ∪	1 U	2.5 U	1 Ū	2.5 U	1 U
-Methylnaphthalene	29.50.50 CSC 460					and the state of t	STANA SEE		
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	NA NA	NA NA	NA NA	NA	NA	NA .	NA	NA	NA
Acenaphthylene	NA NA	NA NA	NA NA	NA NA	NA	NA NA	NA NA	NA	NA
Anthracene	NA	NA NA	NA NA	NA NA	NA	NA	NA	NA	NA
Benzo(A)anthracene	NA NA	NA NA	NA NA	NA	NA NA	NA NA	NA	NA NA	NA
Benzo(A)pyrene	NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA .	NA
Benzo(B)fluoranthene	NA	NA	NA NA	NA I	NA NA	NA NA	NA NA	NA	NA
Benzo(g,h,i)perylene	NA	NA	NA	NA	NA NA	NA NA	NA NA	NA NA	NA NA
Benzo(k)fluoranthene	NA	NA	NA	NA	NA NA	NA H	NA NA	NA NA	NA
Chrysene	NA	NA	NA	NA	NA NA	NA NA	NA NA	NA NA	NA NA
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA	NA -	NA NA	NA NA	NA NA
luoranthene	NA	NA	NA	NA	NA	NA .	NA NA	NA NA	NA NA
luorene	. NA	NA	NA	NA	NA	NA	NA	NA I	NA NA
ndeno(1,2,3-cd)pyrene laphthalene	NA .	NA	NA	NA	NA	NA	NA	NA NA	NA NA
Phenanthrene	NA	NA I	NA	NA	NA	NA	NA	NA	NA NA
yrene	NA NA	NA NA	NA	NA	NA	NA	NA	NA	NA NA
ETROLEUM HYDROCARBONS (mg/L)	NA	NA	NA	NA	NA	NA	NA	NA	NA I
otal Petroleum Hydrocarbons	NA	NA	NA I	NA					
		IVA		NIA.	NA	0.5 U	0.66 J	NA	The same of the sa

APPENDIX I

WELL LOCATIONS AND TOP OF CASING ELEVATIONS

NTC ORLANDO - BUILDING 2273 NEW MONITORING WELLS SEPTEMBER 21, 2000

NAME	NORTHING	EASTING	T.C. ELEV.	GRD. ELEV
B2273-DW-09	1,535,407.61	550,357.44	118.42	115.58
DW6	1,535,431.58	550,430.52	118.74	115.80
DW7	1,535,412.60	550,400.91	118.38	115.61
DW8	1,535,439.03	550,480.98	119.60	115.90
MW6	1,535,492.03	550,424.49		
MVV8	1,535,428.93	550,435.12	119.37	115.81
MW9	1,535,411.85	550,407.70	118.68	115.56
COR BUILDING	1,535,460.78	550,445.94		
COR BUILDING	1,535,441.84	550,445.81	· · · · · · · · · · · · · · · · · · ·	
COR BUILDING	1,535,441.90	550,473.66		· · · · · · · · · · · · · · · · · · ·
COR FENCE	1,535,404.91	550,367.94		· · · · · · · · · · · · · · · · · · ·
COR FENCE	1,535,394.54	550,398.07		
COR FENCE	1,535,391.64	550,488.89		
COR FENCE	1,535,387.25	550,508.36		
COR FENCE	1,535,512.21	550,364.88		·
COR FENCE	1,535,516.28	550,534.94		
END FENCE	1,535,462.02	550,366.18		
END FENCE/COR BUILDING		550,544.30		
END FENCE/COR BUILDING	1,535,508.52	550,544.37		
EDGE GRAVEL	1,535,491.21	550,404.85		